

Lenfant, Claude 2000 B

Dr. Claude Lenfant Oral History 2000 D

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Dr. Claude Lenfant Oral History Transcript
Conducted by: Dr. W. Bruce Fye
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This is the fifth in a series of oral history interviews with Dr. Claude Lenfant, Director of NHLBI. The interview was conducted on 16 May 2000 in his office at NHLBI in Bethesda, Maryland. The interviewer is Dr. W. Bruce Fye.

FYE: In this interview, we will continue our previous discussion. Some of the themes we have discussed already will probably come back in slightly different forms, but I know it will not be redundant. Talking a little about the Institute's mission now— the research mission has three components. In one of the publications, they were termed knowledge acquisition, knowledge validation, and knowledge transfer.

LENFANT: Yes.

FYE: I wonder if you could say something about how the Institute balances these three important concepts and activities, in other words, the acquisition, validation and transfer of knowledge. How do you place emphasis on those and how do you maintain the momentum in all those three directions?

LENFANT: It is interesting that you asked that question because that is something that has become foremost in my mind, it has become my preoccupation. In fact, sometimes it even keeps me awake. I think the Institute has been extraordinarily active, and I would say successful—I hope—but while we have been successful in knowledge acquisition and in its validation by clinical trials, I think that we have been failing, in part, in the transfer area. And I look at transfer in two ways. I do not mean transfer to enrich libraries or bookstores, but transfer for benefit to the patients. During the last few months there are a number of examples which have emerged that have demonstrated that clearly. The gap between what we know that works and could be done and what is basically used out there is greatly widening. I do not want to sound dramatic but I think it is a tragedy or a failure of our system. In fact, for a few months now, we have been rethinking how we can improve this situation and become more active into the translation process, the transfer process that should really bring the knowledge to the patients and the practicing community. We want to be sure that what we do is indeed going to be of benefit to patients. I can give you an example which has been the subject of considerable discussions during the last few weeks. There is a clinical trial which the Institute is supporting, and we are in the protocol development phase. It is about how best to prevent cardiovascular complications in diabetes. So all the experts and devoted scientists who are working on the trials are designing a protocol which may be perfect academically, but some practitioners who have heard about it, or are involved with it, say, "Well, all that is fine, but that is not the way medicine is practiced." Here is an example, you see, of how we are now focusing on how this study is going to be of benefit to the patients. We consider what needs to be done, or maybe what should be included in the protocol to make sure that whatever comes out of the study can be translated into something useful for general practice. I do not know if that is a proper response to your question.

FYE: Very much so. Let me ask you to explore some of the obstacles to transfer of knowledge that you have seen and that you are frustrated by.

LENFANT: I think that there are many. One is that by and large we deal with the research community. And the research community is not necessarily the practicing community. In fact, I would say that often very highly respected people out there in the research community are not people whom I would go see if I had, say, a heart attack! I think these are two different communities. So we work with one that is tilted toward academic pursuits which is to do the research, to publish it, and publish the most interesting part, and often the most interesting part may not necessarily be the most useful in terms of medical practice. So that is one obstacle. The second one is that people who are doing research fulltime are a little like as if they were on a treadmill. They have to keep on running all the time because if they do not, and they get off the treadmill, they are done. So they do not ask for funds to support the translation of the research findings into practical things. Then, another hurdle, I believe, is that the Institute may not be doing a good job itself in its translation or translational activities as this is called these days. I can illustrate this in one way. We have, as you know, that National High Blood Pressure Education Program, which is now 20 to 28 years old. You would think that with this educational program, that with all the drug companies coming up with new products, that high blood pressure should almost be a problem of the past, but time has shown that that is not the case. In fact, if anything it is worsening a little. So you say to yourself, "Where has the Blood Pressure Education program failed?" I think the answer to that is that we have been very active, not to say hyperactive, in picking up the latest piece of research and presenting it in a report, but we have never been very attentive to make sure that the report gets used, and does not end up on somebody's library shelf.

So, we have pretty much decided to stop producing all these reports and shift our efforts to the community level, and speak to the people, the allied health people, the social workers, the nurses, and others, to tell them what needs to be done. Today, you know as well as I do I am sure, that patients come to see you and say, "Well, doctor, I have this, I have that, what do you think, and doesn't it apply to me?" We want to make the patients with high blood pressure go to their physicians and challenge them. It will be interesting to see how this will work, but I think we have to do something. You know better than I do the problem of the beta-blockers, for example. I think today there are up to 30 or 40 percent of patients with myocardial infarction who do not get beta blockers either during the peri- or post-myocardial infarction period, but yet everybody knows they work.

FYE: So there are different audiences for this information. The traditional audience has been the academic community that produces the knowledge and then that feedback goes to them but, as you pointed out, there is not much of an incentive for the academic community to take that final step of publicizing the information beyond their own group, if you will.

LENFANT: This is correct.

FYE: Their treadmill. I guess, in part, if I could carry on with your image. They are racing to get the next grant.

LENFANT: That is right.

FYE: So if they conceive of a study and they undertake it, even when they are doing it they are thinking about the next study and the next grant to maintain that funding stream.

LENFANT: Absolutely.

FYE: Probably the lowest priority is getting that information out beyond the academic, the scientific community, or the granting community. Maybe you could say something about how well the other community—I said the academic community and then the practitioner community which presumably reads some of these things in journals like *Cardiology*, *Circulation*, or the *Journal of the American College of Cardiology*, but you have now mentioned the public, the community of patients or potential patients. How do you think the Internet and the World Wide Web has changed the dynamics of getting information to patients?

LENFANT: It has changed it remarkably. I am sure that there are people who spend their whole day looking for information on their health status or lack of it on the Internet. And we ourselves are feeding the Internet like crazy. We have a web page and all kind of things and information for the public, for the physicians, and others. I personally think it is beneficial. It is beneficial for those who have time to look at it, but it cannot be the only vehicle for translation. It takes lots of time to look for things on the Internet, so that is only one vehicle for translation. There is another problem, and I must admit I may be on thin ice with this statement, but based on our own and based on the professional organizations' web pages you can see that they become dated very fast. It is tough spending your time keeping what you post up to date. If you are CNN where the business is daily news, or even hourly news, that is something else; they have an army of people for that, but we do not have that here. So this is a real problem, and I bet it is the same thing for professional organizations. There are many organizations whose latest news is a little bit old. So the Internet is very valuable but I think it has limitations, and it cannot be the only vehicle to get information out. But having said all of that, I think it is terrific.

FYE: Let me ask you this. In terms of the Institute's getting involved with the Web and with that kind of knowledge transfer and translation to consumers, to patients, what were the dynamics here at the Institute? Who were the people that were early believers in this, and was there some resistance to it? I am sure there was. How did that develop over the last few years?

LENFANT: First of all, it was, and still is, a bit difficult to ignore the Internet as everybody today talks about the Internet. You could go down the hall here, and I am sure that if you asked the question, most everyone will tell you that they pay their bills, they get their news, they buy their stocks, they do all kinds of things, get information, using the Internet. It is not uncommon that people down the hall come to see me and say, "I saw this on the Internet, what do you think?" So I think there is a great fascination with this. It is much more interesting than reading the paper. There is no question about that. It is much more dynamic and it is kind of interactive. Well, it is not actually interactive, but you are in control. Reading a piece of paper you are not in control; with the Internet it is different and this is why there is a great fascination for it. Here, in the Institute, there are lots of people who are very good at playing the Internet. In fact, we have colleagues downstairs who spend considerable time—that is what they are doing all day—to develop our web page and to keep it up to date for the public. We also have what is called an intranet which is communication within the Institute. And we have a couple of people whose job it is to assure quality control. I am really upset when, every so often, I look at our page and I see something that is either not right or redundant. We have a number of distinct programs and they each want to have their own Internet site, which is fine, but I want to be sure that if they are looking at the blood, or the lung, or the heart from two different angles that they both say the same thing, and they do not contradict each other. It takes a couple of people to look at that all day to be sure that this does not happen.

FYE: I can believe that. I think the thing that is striking though is that you talk about this, as everyone else in our society does for all practical purposes in 2000, as if this is just commonplace, yet five years ago almost no one used the Internet.

LENFANT: Yes.

FYE: It has just been such an extraordinarily rapid new way of thinking and learning and sharing. Was there any concern when the Internet was becoming more widely recognized as a means of communication that information would get out there that was not completely filtered or that was perhaps premature? What were those concerns?

LENFANT: Well, just what you said. I think that early on we were not as critical as we should have been. I guess that is right! We were quick to say, "Yes, fine," with no critical judgment. Or even worse, some of our programs would make a deal with some company out there to help with their web information and, all of a sudden, it presented out there, the image of a very disjointed organization where the right hand did not talk to the left hand, and that kind of thing, which I think is bad. So now we have a process. We make mistakes but much less than we used to.

FYE: I guess you might say that it was a period of experimentation where a lot of people thought that this was a valuable tool, but you did not have a system in place to control it to some extent and be sure it was internally and externally consistent.

LENFANT: This is correct. Now we have one group of people that are in charge.

FYE: For the entire NHLBI. But what about the NIH, does it have an oversight group that looks at this?

LENFANT: No, not to my knowledge. I think the Institutes have different ways to do it and different approaches.

FYE: Another way of communicating, and certainly a traditional way for centuries, has been the scholarly journal. Printed journals are still the primary means by which most scientists and most clinicians get their new knowledge. Now certainly many of the research-oriented articles in cardiovascular disease, and I am sure in pulmonary disease and blood diseases that receive NHLBI funding, that information does, in fact, go out through the printed journals.

LENFANT: Oh, yes.

FYE: What do you see happening in terms of printed journals in the future and how will that change the dynamics of research and authorship and information transfer?

LENFANT: I think the jury is out on that. I do not know how you manage that in your own organization, but here there is no way that I can personally read all these things. We do have people in the Institute whose job it is actually to scan all these publications every morning. The general media, the *New York Times*, the *Washington Post*, or whatever, are all on the web every morning. And, as well, they look at *JAMA*, the *New England Journal of Medicine*, *Circulation*, the *Journal of Respiratory Diseases*, and so on. If there is something which they think may have a congressional appeal or lots of public appeal, then that is identified and immediately we designate somebody in the Institute who is going to become the spokesperson on it for the Institute. So, from this point of view, I think we handle it pretty well. For the scientific community out there, I do not know. When I was doing research, we were interested in the big picture. Now I think that investigators are focusing on less and less. This does not mean that less is not important. It may be very important, but they look at what they are interested in and they may not know what else is around. It is really very interesting.

FYE: Let me take you down that path a little in terms of your own intellectual field, physiology, early on in your career, because at the time you entered the academic world, it was still largely whole organ physiology. Now I think the senior physiologists, the emeritus physiologists, sort of look back with nostalgia and say, "What happened to it?"

LENFANT: Yes. That is right.

FYE: Because that is almost an extreme example of how as you say people are no longer looking at the big picture, they are focusing on ever smaller things. I am not even doing a play on words on terms of molecular biology, but even for whole organ physiology, could you just say a little about how that happened during your career?

LENFANT: It happened because I think some person somewhere made an important discovery, and the world of research caught on. I mean, this is how it happens all the time. Look at the molecular biology, at the molecular genetics that developed during the last ten years. It has been quite extraordinary. In my view, the focus on this is excessive. It is very difficult to say that here because everybody has his or her eyes set on molecular/genomics studies. These things are a little like a mirage. I mean, you see something out there and you try to go and reach it. The best example that I can give is gene therapy which actually began in this Institute.. Did you know this term, gene therapy, was invented in this Institute. You don't look as if you knew that.

FYE: I did not know that.

LENFANT: Oh, yes.

FYE: There is a story here, I am sure. Let's tell it.

LENFANT: [W.] French Anderson, who was the chief of our Molecular Hematology Branch, is the one who started gene therapy on this campus, in the country, perhaps in the world. He started with a fellow named Michael Blaese, who is now working in a pharmaceutical company, and with [Steven] Steve Rosenberg, the chief of surgery at the Cancer Institute. French developed gene therapy and then worked with those two researchers; they began treatment of some melanoma. Then French started to apply it on SIDD and also in cystic fibrosis and there was another condition, the name escapes me now. But, anyway, it really started here. But none of that worked.

FYE: What was the condition you mentioned before cystic fibrosis?

LENFANT: SIDD

FYE: What does that stand for? Is it an acronym?

LENFANT: It is an acronym for systemic immune defense deficiency, basically people who have no immune system. Then along came Ron Crystal, who started working on gene therapy. We saw the beginning of this approach mostly in cancer and then it moved into the cardiovascular area. During the last year we have seen gene therapy application in several institutions in the country. The thing which is interesting is that what happened when Varmus became the Director of the NIH; to his credit he realized that the things had been going too fast. I remember in these days when I was interviewed my answer was we have to be as cautious as we are enthusiastic about it. Now back to Varmus. When Varmus came here, he realized, rightfully so, that what was missing was the deep basic knowledge that was necessary to do something like this. It was all empirical if you want. French Anderson started with it at the very basic level but very quickly moved into the clinical arena with no success. Varmus came here and said, "We are really needing more basic work on this." You know, such as gene regulation and gene function. He convened a task force which was chaired by Stuart Orkin, who is a very distinguished hematologist geneticist from Harvard University, and Arnold Motulski, both members of the National Academy of Sciences, very distinguished scientists. Motulski is much more senior, he is from the University of Washington. I knew him very well, actually. I worked a bit with some of his people when I was at the University of Washington. His laboratory suite was next to mine. Back to this task force, which basically said, "We need more basic research," and all that was well and good. Somehow, I think the whole system did not lose interest in the clinical aspect but something good happened, and in a way the task force reinforced the Recombinant Advisory Committee, the RAC. I do not know if you know that.

FYE: The Recombinant DNA Advisory Committee.

LENFANT: Yes. It was disbanded. It was a watchdog, you see, and it was disbanded.

FYE: Was that an NIH committee?

LENFANT: Yes.

FYE: Based here?

LENFANT: It was involved with NIH and also the FDA, I think, but it was based here. So this committee was disbanded, and, eventually, Harold Varmus was much criticized for disbanding this committee. Now it is being resurrected in a different shape and form, but it is coming back. I think what happened is that there was lots of basic research going on, but all these "experts" were interested in the clinical aspects of gene therapy. They had a freer hand to do what they wanted, and they did it and well, you saw in the newspapers all the problems that resulted. I mean, nobody that I know who did some gene therapy, in the cardiovascular area has come out entirely clean in human applications.

FYE: Now when you mention newspapers, because somebody 100 years from now might be reading or listening to this, you are speaking of the business at the University of Pennsylvania with the treatment of the young boy with the liver . . .

LENFANT: Yes. And at Tufts University and also Ron Crystal at Cornell had some problems. There was another man, but I forgot where. There were three or four events where the investigators were so driven by their own enthusiasms and the hope of making a big splash out there that maybe they overlooked some important details. I do not think there was anything malicious in this, at least that I know of, but maybe there was a tendency to overlook what may be a flaw in the system, if you want.

FYE: It is interesting. Your early research, of course, related to the heart-lung machine. If you look at the early history of open heart surgery... I had one senior surgeon tell me particularly that if he were active today innovating the things that he was doing 45 years ago he would never have had a chance because of the IRBs, the institutional review boards and the expectations of society that patients and persons will be protected.

LENFANT: Yes.

FYE: It is a difficult balance, isn't it, in terms of trying to use human subjects for research but, by the same token, being sure that you are not taking advantage of that privileged relationship and that the science is far enough along that it makes sense to do that. You mentioned that ambition and expectations and careers and economics, all sorts of things enter into this. Do you have any thoughts on that?

LENFANT: Enthusiasm. I mean, all these things are true. I suppose that often the enthusiasm for things is the result of ambition or personal aspiration; I think it is mostly a little like kids in the toy store, or the candy store, trying to grab the best. So what is happening now is a setback, but, I believe, in response to your earlier question, that gene therapy will eventually have a place in medicine. But I also believe it will not be to the extent of what some think it will have—if I am proven wrong fine, that doesn't bother me. Although there is a potential! It so happens that next week I am off to Germany and Brussels, in Belgium, I should say. I have been invited to Brussels to participate in a symposium which is to celebrate 100,000 cardiac catheterizations in this particular hospital.

FYE: 100,000?

LENFANT: Yes. So it is a very interesting group of people. But they asked me to talk at the end of the symposium and say, "Okay, where do we go in the future?" Of course, one of the things that I am going to be talking about is genomics and its application to cardiology. I think there is a fantastic potential, but I also believe that beta-blockers had a tremendous potential and this potential has not been fully realized, yet! So the expectation that the outcome of genomic research is going to turn the world upside down is, I think, unrealistic.

FYE: How much of the enthusiasm for this whole approach to research and, ultimately, to clinical practice, this whole molecular biology thing, is driven by financial incentives? I guess that I should probably try to clarify what I am asking. It strikes me as an observer of research that grants have a lot to do with where the focus is in research. In other words, if the money is available whether it is for AIDS research, which was a very palpable example 15 years ago when a lot of people moved into that area of research because there was a good deal of new money going into it, and yet this plays out in all sorts of fields, and now molecular biology in a larger sense. It strikes me as an observer, and I would like you as an insider and a sophisticated observer of this to give your view of this concept if you think it is valid. How much of what I would say is a tidal wave of interest moving in this direction is pulled by the tide of funding that there is more money available for this sort of research and people view it as a more fertile and more secure area for sustained funding?

LENFANT: Your point is well taken, but it is even a little bit more than that. First, clearly—I do not know what came first, whether it is the cart or the horse, and I do not know which is which at this point in time. However, there is no question that the excitement in research came from these original discoveries and so the pendulum, the interest in the support of research moved in this direction. As you pointed out earlier, physiologists are wondering what happened to them. These people are just as good in what they do, if not better, than the molecular biologists, but they do not do molecular biology! I mean, this is the issue . . .

FYE: It is like they write non-fiction and people are reading fiction.

LENFANT: That is right.

FYE: They are great writers, but nobody is reading them.

LENFANT: I do not know if it is true.

FYE: No, maybe, but in other words they just are writing something or doing something that there is not as much demand for or interest in.

LENFANT: Sure. And that doesn't even attract the money. I think there is something else which fuels all this. Now, drug companies are keenly interested in the exploitation of genomic research and, of course, you have all kinds of entrepreneurs in between: the people who get the data and those who eventually are going to utilize it—I have to be careful with my words here—there are also those who interpret, analyze, and basically organize these data so that the big companies can come in and buy it. My sense is that once the human genome is completed next year, the tide will recede a bit.

FYE: So, we are talking about the human genome and genetic therapy.

LENFANT: Yes, I think the tide will recede. I always hesitate to say something like this because I think breakthrough research is very important. I would hate it if you, in particular, interpreted what I am saying as my pooh-poohing exciting, high risk, breakthrough research, but I think that incremental research is really what the people need and I think we are here to do something for them. In fact, the congressional mandate that we have is to do research to improve the health of the people and that will come from incremental research. You know, one step at a time and so there it is.

FYE: Is it fair to say from your perspective that incremental research can lead to breakthroughs?

LENFANT: It can. Breakthrough research needs to be followed by a large amount of incremental research, one little thing at a time.

FYE: As you are speaking, I am thinking of 50 questions to ask. It is very difficult to try to stay on track in the interview because so many things that you mention are very stimulating in terms bringing up new topics. One thing I do want to ask you about is the desire of certain disease-related groups like the American Heart Association or any number of other voluntary health organizations to try to get funding for their own disease entities or the ones they represent. It is almost a self-fulfilling prophecy based upon what we were saying earlier that money does, in fact, direct research. Clearly, if you can get more money funneled into a specific area of research, that will attract more researchers and theoretically will increase the likelihood of not just more incremental research, but there may, in fact, be more breakthroughs.

LENFANT: There are different levels in that. For example, the Heart Association always says, "We don't have enough money," but the fact is that they have what I think is a lot. So this is one way to look at trying to influence the process, but another way is to look at conditions which affect less than 50,000 people, basically the rare diseases. Personally, I have tremendous sympathy for these groups. In fact, there are many examples of what we have done in this Institute to work with these groups, and I think successfully. Sure, we give them some support but, more importantly, they have the feeling that we pay attention to them. Let me backtrack and say that we should not take any credit for that; it all comes from the Institute of Medicine. I do not know if you recall it, but three or four years ago, the IOM was asked by the NIH to look at the priority setting at NIH. One of the recommendations that came through that is that the NIH should involve the public, and get public representatives, the various interest groups, to participate. So Varmus created a Committee of Public Representatives, COPR, and he had a meeting with them. One of the things that came from that is that each institute should do the same thing focusing on its sphere of interest. Earlier this year, February 9, we had a meeting where we invited a number of representatives from all kinds of organizations. This was a most interesting and exciting meeting, and now we have established a very nice rapport with all these groups; we even developed a publication just for them, and I think it is very useful. I think the Institute benefits tremendously from doing that. I mean, the public out there is not stupid! There is a tendency to say, "What do they know?" Well, they know a lot.

FYE: How do you maintain civility among the different institutes at the NIH when these different interest groups go to Congress, and they start this debate about needing more. We need more because clearly this is a huge institute, the National Cancer Institute is huge, the others are smaller. How do you maintain civility and a sense of order when there are clearly smaller institutes that might benefit from noisy interest groups promoting their disease entities?

LENFANT: I think that equilibrium establishes itself over a period of time. There may be a big to-do one year, but eventually all these things level out. When it is in response to outside pressure, or conversely, if the pressure on the Congress comes from inside, as it has been during the last few years with respect to genomic research then, of course, this has a much greater impact on all of the institutes, because it is a more lasting impact. But I suppose all of us are somewhat philosophical about it. I must say that I am not terribly perturbed by that because I think that there is nothing I can do about it. I do not exercise myself over things that are not under my control. I am very concerned about my blood pressure, so I limit the occasions where it is going to increase. I also believe that what is being done here at NIH would benefit many, and so we benefit in a way from the total interest. That may be easy for me to say because the Institute does pretty well.

FYE: Financially?

LENFANT: Yes.

FYE: In terms of as a percentage of the NIH budget?

LENFANT: Sure.

FYE: But certainly in terms of this country's expenditures, the gross domestic product and the amount of money that is spent on defense... One thing I heard just the other evening on a television show was that one aircraft carrier or something like that costs about \$4 billion or some incredible amount of money and that, of course, is about three times or more the budget of this Institute.

LENFANT: Twice.

FYE: Twice. So you have done a little better and maybe there has been some discounting in the super aircraft carrier area, but still when you frame it in those terms, it does not seem as though this country is spending perhaps as much money as it should on research, whether it be in for cardiovascular disease or lung or blood, or the whole NIH program of federally funded biomedical research.

LENFANT: Yes. I have to tell you that you are using an argument that has no appeal to me. To compare what you would spend on heart disease or whatever with an airplane, to me that is irrelevant. The fact of the matter is that, judging from what is happening, this country chose to go fight wars here and there, and when this is the case, we have to provide the military with the tools they need. Also history has shown that recently the share of the total budget for defense has decreased, whereas the share of the budget for health and research has increased quite markedly. When I first came here, the Director of the Institute, [William] Bill Nelligan and I had lengthy discussions about all that, and he was always telling me, "All my cardiologist friends are telling me that there is not enough money for . . ." and I would answer him, "Well, fine, how much is enough?" He was never able to give me a figure, and that is the thing, you see. People are never able to tell you exactly what they think would be enough.

FYE: My sense is that whatever that number is once they get it, it is not enough.

LENFANT: That is right. So, I have to show you something. I apologize to do that but I saw it in a document prepared by economists (takes a booklet from his trash can). They basically argue that the economic returns in medical research are just fantastic. And if you look at the share of biotechnology in the stock market, it is tremendous today.

FYE: It certainly is.

LENFANT: I apologize for picking it up from the waste basket.

FYE: Oh, I think that is fine. No, I was not sure what was coming out of the trash can but it is a little brochure called "Exceptional Returns, the Economic Value of America's Investment in Medical Research," and it is a document that, as Dr. Lenfant has just pointed out, apparently shows that the return is quite good. One thing that I suspect will help funding for most areas of medical research, but certainly for the Cancer Institute and the NHLBI, is the aging of our population and the increasing concern about it. You will have a critical mass of people entering the graying age range, the senior years, when obviously heart disease and cancer are the primary threats. Presumably as taxpayers there will be increasing willingness to support funding for research that promises in some ephemeral way to improve a person's life and longevity. I am being provocative here because I know that this is an area . . .

LENFANT: But let me tell you. As one gets older, like me, you become more philosophical about a number of things. It so happens that last Tuesday I was in Toronto attending a meeting of the American Thoracic Society, and they had invited as one of their keynote speakers for the presidential lecture the former governor of Colorado, George Lamb. I do not know if you have ever heard George Lamb, but he is an extraordinarily articulate person. The theme of his speech was that we cannot have it all, and that we have to have priorities. He gave examples which actually I can corroborate because I know it is true that this happened when this Institute was involved with one program which was the National Marrow Donor Program, or NMDP.

FYE: For bone marrow transplants.

LENFANT: Bone marrow transplants. In those days, that was about 10 or 12 years ago, there were states with the highest level of poverty, that had no vaccination programs, but they would send some of their citizens, kids, to another state to the tune of \$250,000 to get bone marrow transplantation. Well, this is an interesting trade-off. One of the questions asked by Mr. Lamb was, "Should you do something for 100 people when the cost of doing it would benefit one million people elsewhere?" This is a very important and interesting question. He was a remarkable speaker. I wish I would have such ability. But, anyway, he said, "that in everything there is the good and the bad, and what I want to do is to give you two examples showing the good and the bad." He said, "You are a father and you are so happy to see your daughter even if she comes back home late. That is the good news. The bad news is that in her hand she has the Gideon Bible!"

FYE: From a motel!

LENFANT: Yes! He gave another story which was somebody saying, "I would like to die suddenly in my sleep like my grandfather, but not like the passenger in his car who was screaming, terrified." I cannot give you the story with his way of doing it, but it was very remarkable. But the thing is that I am a firm believer in the idea that you just cannot have it all. You have to make choices.

FYE: A very pragmatic approach to life and the world.

LENFANT: Absolutely. And that is especially important for the elderly population. Getting into that category, should we spend huge amounts of money to move people from 80 years of age to 81 or 82, when lots of people in the prime of their life are dying; the fact that they are dying limits the resources that we have to take care of the old people.

FYE: In terms of a tax base, the working population.

LENFANT: That is right. I mean, these are very important issues.

FYE: Our country does not deal well with that. Oregon is the only state that has even begun to tackle some of these end of life issues as far as I am aware of and with tremendous negative publicity. It is something that is fascinating because just as we were talking earlier about the fact that there are scientists that are trying to push the limits of research and innovation, it seems that it is almost a contest in some respects in the literature to report that you have operated on a number of people over the age of 80 for aortic valve replacement, let us say, and that their mortality is acceptably higher but not so much higher and that they live longer. You know what I am getting at. It is a real issue particularly as our society ages. You can imagine that the older people are going to lobby for those resources being available to them regardless of their age. How do you see that playing out?

LENFANT: Sooner or later somebody is going to have to make tough decisions. They have to or the system will not work. As you point out, the tax base is going down and the trade-off is going to be this against that. But, let me tell you, it is the same thing in the Institute. I cannot get the division directors to make priority decisions. This morning, actually, we had a discussion to plan for the meeting of our council which is on Thursday. There are tradeoffs that need to be made, and I talked to them about them. I do not know, they probably find it boring, they looked as if they were falling asleep, and they just have no reaction to that.

FYE: Why do you think that is? Why is so hard for your division directors, why is it so hard for us as a society and as individuals to make those choices and determine the priorities?

LENFANT: Limited vision. I think that, by and large, people act upon what they have today.

FYE: And do not want to confront the vagaries and the uncertainties of tomorrow and beyond. Deal with the problems at hand. We have talked now for almost an hour, and I have gotten through my first question, but again, as I mentioned, it takes time because you say so many interesting things that raise so many other questions that lead us down various paths. I think that is the value of these interviews and what is interesting for me. But I do want to ask you just in terms of these missions of acquisition, validation, and transfer of knowledge, how does the Institute's role in respect to these things differ from an academic center, let us say like the Johns Hopkins? How does the Institute's role in knowledge acquisition, validation, and transfer differ when compared to a traditional academic medical center? Or is there a difference?

LENFANT: I think there is, but it is an interesting question. Let me see if I can think fast enough about it. I think the answer is to define what you discussed earlier, that is, that where the money is the action is. We provide the money, Johns Hopkins spends it. Of course they also have defined their clinical activities, and I suppose that in an institution like Johns Hopkins the clinical activities are in a very small part influenced by what comes from their research done locally. But I would say the difficulty or the time that it would take for their research activities to be influenced by the big picture is as unsatisfactory as it is elsewhere. But the reason why the Johns Hopkins University may be doing better is that lots of research is being done there. So they have next door a great deal of the things that I would like to see beyond Johns Hopkins not just in the university hospitals which are tertiary hospitals. Earlier, when I made that remark about using research outcomes, I was talking about primary care in the community hospital. Let me just give you an example. We have established a connection with the Suburban Hospital across the road here, and my understanding is that this connection, which is of great benefit to our research branch, has benefited them much more than if they had only read about what came from our research but was put on the shelf. Do you understand what I am trying to say? They are partners instead of bystanders.

FYE: I would like you to expand on that. I know where Suburban Hospital is. It is almost across the street from the Institute . . .

LENFANT: Yes, it is across the street.

FYE: . . . and Gene Passamani, I think, is there as Chief of Cardiology and, of course, he was in your division, in your institute, for many years, so you have a close personal relationship with him.

LENFANT: Yes.

FYE: What is the relationship between the Institute and Suburban Hospital?

LENFANT: We have set up a unit of magnetic resonance imaging. I mean, there is nothing unique about that. What is unique is that basically we put it behind the door of the emergency room, which means that any cardiac patients who gets to this hospital for a cardiovascular event can go through the magnetic resonance imaging before going to his or her bed or the surgery room. In so doing, a true anatomical and functional diagnosis is made on the spot in contrast to having only an EKG. So the diagnosis may be made or not, and if not they get an enzyme test, but depending on the nature of the lesion, the enzymes confirming the MRI may take one hour or five hours to show up. With magnetic resonance imaging that is real time. In five minutes you have the thing, well not five minutes, it takes about 20 minutes to get through the whole thing.

FYE: Not PET scanning but an MRI?

LENFANT: Yes, an MRI.

FYE: What are they looking for? What specific information from the image of the heart are they collecting and looking at?

LENFANT: By looking at the heart motions.

FYE: So, basically, left ventricular function and real-time MRI to identify regional wall motion.

LENFANT: Sure. Then instead of doing an angiogram by pushing a catheter in, they can inject something in a vein and eventually it gets to the heart and you see the heart vessels. So you have got information that you would not have anywhere else.

FYE: So as far as you know, no one anywhere else is doing this.

LENFANT: I understand now that there are a couple of other units which have done the same thing. We do it for coronary heart disease and the Neurology Institute joined forces with us, and they do it for stroke. Basically, my understanding is that some patients get there almost paralyzed, but they are treated very early and they walk out on their own because they have been treated most appropriately on the spot.

FYE: More appropriately.

LENFANT: Yes. The great fear, of course, is to know whether it is an hemorrhagic or obstructive stroke, and if it is obstructive what kind of obstruction and so forth. Well, now they see it.

FYE: Of course, I am thinking here, about the implications of having an MRI unit in every community hospital because of the advance it represents and the more accurate diagnosis.

LENFANT: You got it; of course the MRI should be in all university hospitals. . . but it may be set up in a great number of places. You spoke about Johns Hopkins. I do not know where their MRI is, but they should move it from wherever it is, to behind the doors of the emergency room!

FYE: It is fascinating. Obviously the NIH is in the business of understanding pathophysiology in part, so it is easy to understand how this technology would enhance an understanding of the pathophysiology of infarction or cerebrovascular disease and thereby enhance care without replicating that equipment everywhere in the country.

LENFANT: Yes.

FYE: Let me ask you another question in terms of the acquisition, validation and transfer of knowledge, the three-component mission of the NHLBI. We talked about how that might differ a little from a major academic medical center. How does it differ from let us say a pharmaceutical company where they are clearly in the business, or at least a part of their business relates to new knowledge and the validation of it and then transferring it. It is not in the same sense as NHLBI, but maybe you could expand on this. How does the Institute differ from the other research entities I asked you to talk about such as the academic medical center? How about, for example, the pharmaceutical industry?

LENFANT: In the first place, I think pharmaceutical companies when they collaborate with others have two ways to do it. One is to sponsor conferences or symposia to which they bring local physicians, for example, to the Heart Association or the College of Cardiology meetings, or they send somebody to see the physicians. But, in both cases, whether we want to recognize it or not, it is very focused on a very specific product. We at NHLBI do not address specific products; we speak about the issue that warrants the utilization of the product, not about the product. Do you understand the distinction I am trying to make?

FYE: Oh, yes.

LENFANT: So I think that we focus more on the big picture.

FYE: Of course, they have a profit motive . . .

LENFANT: Yes, sure.

FYE: . . . that does not exist, at least I cannot think of an analogy, within the Institute..

LENFANT: No, we do not have any profit motive.

FYE: Let me turn to prevention. The 1972 Act certainly broadened the Institute's whole mandate in terms of research and education, and one part of that related to prevention, etiology, epidemiology and prevention of diseases that are in the Institute's purview. That was just two years after you arrived at the Institute. I am curious about when did you personally become especially interested in prevention?

LENFANT: I think it happened mostly when I came to the Institute, when I was working in the pulmonary area. That was shortly after the first Surgeon General's Report on Smoking

FYE: Was that 1965?

LENFANT: I think it was later than that. Anyway, whenever it was, there was so little known in the pulmonary area; the only areas where prevention was mentioned was COPD and chronic bronchitis, and the answer was, "Quit smoking." Let us get rid of smoking and there will be no COPD. I hate to say it, but that is a fact; the focus on smoking cessation and quitting smoking exclusive of anything else has set back progress in research on COPD, in my view, for almost 20 years. But now it is changing. Now, a number of people still talk about smoking and quitting, but you also have a cadre of very distinguished researchers who are focusing on the disease and its mechanisms and how you can treat it. I think there is an era of very exciting progress that we are going to see in COPD, but now back to the Institute. . . When I became the Director of the Institute, which was in 1982, and it was the tenth anniversary of the National High Blood Pressure Education Program, I looked at what the Program was doing. . .

FYE: When you say were doing, do you mean smoking . . .

LENFANT: No, I was talking about blood pressure, not about the other risk factors.

FYE: Okay.

LENFANT: And by then the very famous, or infamous, multiple risk factor clinical trials came out...

FYE: MRFIT

LENFANT MRFIT also came out

FYE: I know it, the coronary drug project?

LENFANT: No, that was before.

FYE: Lipid research centers.

LENFANT: Yes. I became very involved with that, and I saw tremendous opportunities to do new things. I can take some credit for giving the Institute the prevention orientation that it has now, certainly in blood pressure, in cholesterol, in heart attack, in blood safety, in asthma, in sleep disorders. We have all kinds of dissemination, prevention activities. We do not even talk about smoking anymore. Earlier this morning I was discussing with some of my colleagues about starting a new program on public education on heart disease in women. Women say, "Oh, nobody pays attention to us, physicians don't pay attention to us, they misdiagnose us." My position is that the women in part are responsible for that. I want to go to them and give them the layout of the land so that they can make their own judgment just about complaining and not knowing why they are complaining.

FYE: Let me ask you this. You mentioned that you first sensed that you became interested and committed to prevention when you became Director of the Institute, but that was pretty late. That was 1982. What do you think were some of the factors that went into your becoming interested in prevention? I do not imagine that just on a single day, suddenly you are Director of the Institute and you noticed prevention was something that was undervalued and you were going to focus on that. I imagine it developed over time.

LENFANT: Well, I have always been interested in public health issues. I am very deeply interested in public health and prevention is really a tool that we have to enhance public health. I saw opportunities. In lung disease at that time, we all knew what to do; smoking was the focus, and I was a partner in this limited view of lung disease; it was only quitting smoking. So, I do not blame anyone, I was part of that. But in the cardiovascular area, I thought that there were lots of opportunities to bring a new focus. I mean, of course, risk factors and cholesterol, smoking itself and obesity. All of these things had been around for a long time, but I do not think there was a focus on them in the Institute. In the first place, I created a division which was a vehicle for the Institute to support this research; this is the Division of Epidemiology and Clinical Applications, and one of its mandates is prevention research. Then I expanded the Office of Prevention, Education and Control.

FYE: You mentioned that you have had a long-standing interest in public health. Why do you think that is? What led to that interest and at what stage of your career did you have an awareness of that concern?

LENFANT: At one time in my life, I was a practicing physician in the countryside.

FYE: You delivered babies and delivered them in the homes. I remember you telling me this.

LENFANT: Yes. Waking up in the middle of the night because something happened.. It was really hands-on medicine.

FYE: That clearly changed your life in a variety of ways.

LENFANT: It had a great impact on me.

FYE: What about public health in France and the United States?

LENFANT: Oh, we are far ahead of any other country.

FYE: Any other country.

LENFANT: Oh, yes. No question about it. We are not good, but we are much better than anyone else.

FYE: Why do you think that is?

LENFANT: I think this Institute has played a considerable role in that and the American Heart Association as well. I have to give credit to the Heart Association, but I really think that this Institute has done a lot for public health.

FYE: Now, part of that obviously has to be sort of a conducive environment. In other words, if Congress did not believe this was important and there was no funding and there was no encouragement...

LENFANT: It does not cost much money for prevention.

FYE: Right.

LENFANT: We study treatments; we do not spend a huge amount of money in prevention.

FYE: One of the areas that I wanted to explore is the industries that are affected by prevention. The tobacco industry, obviously for the last 40 or so years, has been under siege, as you mentioned, in terms of its role in creating diseases. I guess that you could also argue in some respects that the dairy industry and all sorts of food industries . . .

LENFANT: Yes, sure.

FYE: . . . the beef industry, for instance, are portrayed as producing unhealthy products. What do you see in terms of those dynamics? What would have been your observations over the last several decades about the relationship of various industries as this Institute and this country in general have tried to emphasize the importance of prevention?

LENFANT: I am not sure that I understand the question, but to the extent that I do, I think that the Institute cannot be the only voice for prevention. It has to be a partnership with all kinds of other parties. It is a very interesting thing. I must say that I am watching with amazement what is happening in this country, how we are taking on the industries one at a time to bring them to account for what they do with complete disregard for what we do, or not do.

FYE: Do you mean we as individuals?

LENFANT: Yes.

FYE: Taking personal responsibility for choices.

LENFANT: Yes, I must say I find this very astonishing how a civilized very intellectual society can go through that really. I mean, this is bizarre to me. We are touching on political issues.

FYE: It is interesting, though. Let me frame the question a little more precisely because I read one of your editorials published in 1983.

LENFANT: Did you?.

FYE: You are in print here and cannot escape it now. It was an editorial in the *New England Journal of Medicine*.

LENFANT: On smoking.

FYE: Yes, exactly. It was titled "Are low-yield cigarettes really safer?" That was in response to the cigarette industry's development of so-called low-yield cigarettes, cigarettes that contained less tar and nicotine. You closed your article with the statement, "In short, it is obvious that despite seductive advertisements there is no less hazardous safer cigarette." One of the questions that I have in terms of that 1983 editorial is did you get any direct feedback from the tobacco industry or their lobbyists, or did you get any kind of pressure or aggravation, as a result of that.

LENFANT: No, never.

FYE: Why do you think that is? Because you were a pretty influential person speaking.

LENFANT: Well, remember that was, what 1983?

FYE: 1983, yes.

LENFANT: So it is 17 years ago. It was a very different climate. Now, I can tell you I am not sure I know why, but nobody ever mentioned that editorial to me.

FYE: Let me ask you what you thought. I suspect you saw on C-Span or CNN or one of the networks now four or maybe five years ago when the FDA was... It was the congressional hearings with the CEOs from the big tobacco companies. None of these CEOs as I understand it are now in those positions, but how they, one after another, in response to direct and persistent questioning from members of Congress, denied that cigarettes or nicotine was addictive. What did you think about that as you saw it?

LENFANT: I think it has been pretty well established that nicotine is addictive. It is interesting that nicotine is addictive, but this is not what causes the problem in the heart or the lung. It is the compounds that you find in the smoke. Even if, I suppose, you were smoking hay, you probably would have similar effects, perhaps to a lesser extent. So when these guys said it is not addictive I must admit I do not know what they knew. They gave a good show on television, but nobody believed them.

FYE: I know, but did that bother you? I guess I am betraying the fact that it bothered me to see them clearly not telling the truth.

LENFANT: Yes, it bothered me. I do not know how they could have protected themselves against that, and said, "Yes, it's addictive." I can think of lots of things in life that are addictive. I mean, from alcohol, sex, good food or whatever, basically we are all driven by similar things. I do not want to give excuses to the tobacco companies for what they did and what they said, but the thing that I find astonishing is that we blame them for our own behavior. I think it will not be long before we are going to blame the automobile . . .

FYE: Blame what?

LENFANT: The automobiles when we have an accident on the road. We already do, actually.

FYE: It is interesting that you mention that because there is no question that is the debate that is raging right now with gun control. I mean, it is two days after Mother's Day when there was the Million Mom march in Washington about gun control. That is the same sort of issue. Guns do not kill, people do, and if you choose not to smoke a cigarette you will not die from the consequences of smoking. I guess it is a societal approach to try to shift the blame or deny the responsibility.

LENFANT: And then we have to feed all these lawyers. I came back Friday night from Japan.

FYE: How did you get from Toronto to Japan? Weren't you just in Toronto, too?

LENFANT: Yes. I flew to Japan on Wednesday, I got there on Thursday, and I was back in Saturday. So, when I was in Japan I watched television, CNN, and they had a piece on law schools which are now putting on the streets hundreds of lawyers. All these lawyers are finding jobs with no difficulty at all and, just out of school, some are making up to \$120,000 a year. Well, they have to make money. I mean, to produce money or income for the firm that hires them. We can be sure that we are going to see a new wave of litigation, and it is a little bit frightening, actually.

FYE: In terms of the focus on prevention in the Institute, what sort of support did you have from the leadership of the NIH at that point and through the early years of your career?

LENFANT: Not much. I mean, prevention is not the thing of NIH.

FYE: That is the interesting question because, in the 1972 Act, it clearly expands the Institute's responsibility to prevention, but I guess I am stereotyping now, and it is really just what you said. The image of the NIH was certainly not prevention, it was basic research. Was that a clash of cultures that you clearly had an expanded role to go into prevention but you did not have a cadre of people committed to preventive medicine?

LENFANT: No, but nobody paid attention to it. It is very interesting. The central NIH is much more interested in the process of how we do things rather than the substance of what we do, because they know that, by and large, we do what we are supposed to do. I work on heart, lung, blood and sleep, and we do it. Now, whether we do enough of this and not enough of that, they do not really care too much. They probably care, but they do not have time to look after all that. After all that is why they hired me. If they don't like what I do, they can fire me and have somebody else.

FYE: Who were your allies? Did you have other people that you could turn to who were within the Institute at that time whose thinking resonated with your ideas?

LENFANT: Oh, yes. Now we have a group of . . .

FYE: But I mean early on, in 1982

LENFANT: There were some that were very pleased, very glad. The fellow who was mostly interested in that was a very distinguished gentleman by the name of [William] Bill Friedewald who is a very good man. In fact, when Jim Wyngaarden was the Director of NIH, he was asked by the Congress to create an Office of Prevention in Building 1. There is now an Office of Prevention in Building 1. Did you know that?

FYE: No. What is Building 1?

LENFANT: It is where the NIH director has his office.

FYE: It is the main office of the NIH hierarchy?

LENFANT: Yes, it is the office of the Director of NIH and his staff.

FYE: That makes sense, Building 1! Does that mean there are 30 buildings more important than Building 31 where you are located?

LENFANT: No, it means that they are older. There are actually 50 or 51 buildings now.

FYE: That is quite incredible.

LENFANT: Yes, it is a big, big place. When this Office of Prevention in Building 1 was created, Bill became the Director of it, and left the Institute. So I recruited a fellow to replace him by the name of [William] Bill Harlan from the University of Michigan. Then, when Bill Friedewald left NIH to take a job at Metropolitan Life Insurance, Bill Harlan was recruited by Building 1. But, in Building 1, I do not know for sure exactly what they do in that Office of Prevention. I think it is mostly kind of "coordination" and acting something like a clearing house, keeping track of what is going on in the Institutes, but they do not get involved with what is going on.

This is a continuation of the fifth oral history interview of Dr. Claude Lenfant

FYE: One thing I have to ask you, I could guess the answer, but again I would be stereotyping. Did you smoke cigarettes?

LENFANT: I did at one time.

FYE: That would have been my guess because when you were growing up in France, I would think cigarette smoking was quite prevalent.

LENFANT: Yes, I smoked until 1962.

FYE: Why did you stop?

LENFANT: Because I could not afford it anymore! When I came here, things were difficult, and smoking was really a significant cost. So I had to get myself ready to stop. It took time to decide that I would quit smoking, and then one morning I woke up and said, "That's it." That was it.

FYE: Did your awareness of the health consequences of smoking play any role in that?

LENFANT: It was only driven by economy!

FYE: Strictly economic reasons.

LENFANT: Strictly.

FYE: Then I would ask for your thoughts about the approach of our government to increasing cigarette taxes with an eye towards discouraging people from smoking.

LENFANT: I agree with it, but it impacts only on people who are less financially fortunate than others.

FYE: That makes sense.

LENFANT: That makes sense to me. Isn't that what they do with gas and things like that? People have to make choices and decide.

FYE: It is interesting that you mention gasoline, though. We are at the moment, in sort of a high water mark in gasoline prices in recent years--I guess ever in this country. But many other parts of the world think of American gasoline as extraordinarily cheap and that promotes over-consumption. So we use economic incentives or disincentives dependent on a variety of factors. But cigarettes for you were expensive and so you stopped smoking.

LENFANT: Yes.

FYE: Many American physicians, of course, smoked in the 1960s.

LENFANT: Oh, yes, sure.

FYE: What were your observations as you became more concerned about preventive medicine, and became more concerned, I am sure, about the image of physicians smoking at the same time as your Institute has tried to discourage it. How did you reconcile that?

LENFANT: I stopped in 1962 because of economic pressures, but if I had not done it then, I would have later because of social image pressures. This is why all the other physicians stopped, actually. I think it has been a very successful popular movement. The other thing that I personally find kind of out of whack in all that is how we blame exclusively the industry and have forgotten about the individual's role in that. The fact is that nobody puts a cigarette in our mouths. We have done lots of things which are good such as changing the somewhat deceptive advertising. In Japan everybody smokes, and they are complaining very much about Virginia Slims.

FYE: About Virginia Slims?

LENFANT: Yes, the advertising of Virginia Slims. I think it is going to get off the billboards you see pretty soon. But it seems to me that they have done all that could have been done. What I find the most unbelievable is to see people who, for whatever reason, took up smoking and then die from this or that, and the relatives are so angry at tobacco companies. I find that very bizarre.

FYE: Again, the unwillingness to acknowledge that anybody along the way made a choice.

LENFANT: Yes. I can tell you they would never put me on a jury of one of those things.

FYE: I see that we have covered a number of my questions.

LENFANT: You sure do lots of homework.

FYE: Maybe I could ask for your perspective on the response of the medical community to the concept of prevention of cardiovascular disease and pulmonary disease. They are somewhat different in their approaches, I think, but, anyway, as your career unfolded over the last 20 to 30 years.

LENFANT: I think the intentions are perfect, but the reality is less than perfect because there is no compensation for that. That is what physicians are telling you. First of all, there is very little in formal teaching in the university medical schools about prevention.

FYE: Still, I mean . .

LENFANT: Yes, it certainly did not exist when I went to the University of Washington, and from what I am hearing now it is very little. You have got me going on something which I find absolutely astonishing. In a very distinguished university with a good reputation, there are two cardiologists who all of a sudden became interested in prevention. They came to the Institute, basically asking the Institute to set up some sort of a set-aside program, that is to sequester money just to support this prevention program.

FYE: Within their own institution, or in general?

LENFANT: They could have applied as well, but for this purpose they said, "We cannot support what we want to do in prevention." My reaction to that was very negative. It was, "It seems to me that you have all the people, it does not take long, you could do that yourself and there is no reason for us to do that." It was just as if they were asking me to set aside money for say electrophysiology or cardiac catheterization or whatever, and, of course, it would be foolish to do that. So all this is to say that the physicians talk a lot about prevention, and I think they want to do it; they believe in it provided that somebody pays for it, and I think it is the same thing or even worse in private practice.

FYE: Certainly there is no technology attached to it.

LENFANT: Sure, no income.

FYE: There is no procedure that can be billed for so it is not as well reimbursed if at all compared to many other activities. Although I must say I have sensed a huge growth and interest in prevention in just the last five years. I think it is since some of the major clinical trials around the world have proved beyond anyone's doubt the value of not only secondary prevention, now primarily cholesterol . . .

LENFANT: But I think the focus is mostly on secondary prevention.

FYE: Yes, I do not think there is any doubt about that. Certainly, that is when the cardiologists get involved, and I suspect the pulmonary specialists too.

LENFANT: I suppose one of the things that may come from genomics is the ability that we may develop to tell a person, "You have a genetic determinant which is associated with a high risk of smoking." Amongst smokers there are some with a polymorphism which makes them at risk to have a heart attack, and other people with different polymorphism who smoke 20 cigarettes a day may be at a much lesser risk of a heart attack. I may even have that here and can show you the picture. [looking through papers] There it is. You see people who have that polymorphism can have 20 cigarettes a day per year, that is what it means. They have fewer heart attacks than these people who have this variant.

FYE: It shows that there is still a great deal we do not know.

LENFANT: That is right. So when we take a blood sample from you to look at your cholesterol and whatever, we could say, "Look, you have this variant and here's the fact that you have two and a half more chances of a heart attack than if you did not have this specific genetic variant." This may be a powerful message to communicate to people.

FYE: I think that is an important point. Let me ask you. I want to pursue this concept of using the human genome project and the ability to identify persons at risk for specific conditions. You have another chart here.

LENFANT: Here are my views of it. [looking at a chart] You see this is an example of a genetic variation. It can have an altered function or it can be altered; if it is altered then here is the impact. It can affect the susceptibility to a disease, the progression of a disease, or the responsiveness to a specific medication.

FYE: So DNA variation can either lead to unaltered function or altered function and, if it is altered, it can be altered in a variety of ways.

LENFANT: That is right.

FYE: Yes.

LENFANT: This is the clinical relevance of that, you see.

FYE: One question in terms of the clinical relevance. One could argue—and this point has been made by many others—the ethical impact, but more important, I think, is what I would characterize as the emotional impact of a genetic map of yourself, if you will, if it is designed to identify what specific conditions you are at risk for. The reason that I bring this up is that most people only die of one thing, but I sense that the power of this whole human genome map and the ability then to take your blood or my blood and say that you are at a ten-fold risk compared to the average person for X type of cancer. Presumably that could be played out for 30 kinds of cancer and 20 other illnesses or 200 other illnesses. So, suddenly you are confronted with a piece of paper that shows you that you are going to die of 50 different things. In other words, you do not worry about one thing when it happens in real time. Instead, some people would worry presumably about all of those things, most of which are mutually exclusive. What do you sense among the community of scientists? What is their response to that? What are some of the suggestions of how to modulate that concern?

LENFANT: Let me present to you a very radical view of all that. For the same reason that people who smoke blame the cigarette manufacturer rather than themselves, I think that people who will be told that they have a gene which may have such and such a health-related impact will not care about it. The best example that I can give you is Cooley's anemia. We know exactly what Cooley's anemia is, we know the gene, and we have a very-well defined disease. People who have that disease are told that they should not have children and even possibly not get married to somebody who has the same gene. But the fact is that this does not happen. The Cooley's anemia population in the United States is very constant in number. The reason is very simple. Instead of the population diminishing through genetic counseling it keeps at the same level, and this is because people are ignoring the counseling they get. I think that even if you tell people, "Here you are and you have a greater risk of heart attack because of your genetic makeup." If people want to smoke, they will keep on smoking anyway. So I think that all this is very interesting in an intellectual way, but in a practical way I have some very strong doubts. The impact of this is in contrast to what may have some effect on the disease progression because that is not under the control of the person but under the control of the physician and the patient's of response to drugs. However, that is not going to have a tremendous impact, which is actually what we should get.

FYE: Or people can make more informed choices based on the objective risk to them as an individual.

LENFANT: Sure.

FYE: Let me turn for a moment to the Framingham project. You were on a telephone call just before we began the interview that obviously related to that. The Institute has been very central to the Framingham project since its inception. Could you comment about the Framingham project, what you think its significance has been and anything else that you want to discuss.

LENFANT: I think it has had a tremendous impact. I really think that it has charted the course of many aspects of cardiology, not least preventive cardiology in this country, not to say worldwide. It has identified cardiac risk factors, it has coined the term risk factors, and ever since it has looked at a number of things related to blood pressure or congestive heart failure. There is a thick book of all the discoveries coming from Framingham. I truly think it has been of tremendous importance. I would say though that the return from it has been rich in terms of publication, certainly very rich in publication, rich in accumulation of data, but perhaps all that we learned from Framingham has not been fully utilized. This is a flaw of any epidemiological study. They produce more data than they can use and, for this reason, I think that the thing you heard me talk about here which is the improving the utilization of their data can be improved.

FYE: Certainly there is much more awareness of the Framingham project in the last ten years.

LENFANT: Oh, it is known worldwide.

FYE: It is something that I think is now universally viewed with admiration and respect, but it certainly was not always that way, was it? Wasn't it viewed as somewhat of a fringy kind of thing for the first few years?

LENFANT: No, not really. It was not seen that way. Again as we mentioned earlier, knowledge about prevention, not knowledge only but the understanding and realization of what prevention can do occurred in the last 20 to 25 years, something like that. And that has been associated with Framingham because of the longevity of Framingham. You know it is 52 years old.

FYE: It is amazing.

LENFANT: A third or fourth generation of people is now being looked at, so it is fantastic. We should consider this study to be a national treasure.

FYE: We have talked a little about the prevention of pulmonary disease and talked quite a lot about the prevention of cardiovascular disease. We have not talked much about the prevention of blood disease.

LENFANT: Well, there is not much. I just mentioned Cooley's anemia, for example, and no other. The other issue that has been of interest to the Institute is safe blood. Of course, blood becomes unsafe because people are themselves unsafe, and you cannot control that. If you could control that, conditions and diseases like AIDS and hepatitis C would have almost disappeared.

FYE: What has been the role of the Institute with AIDS because it [the research] started out in this Institute but it moved, is that right? Could you help me understand the dynamic of that?

LENFANT: It did not start in this Institute. It started in the Allergy and Infectious Diseases Institute.

FYE: It was always in the infectious disease area?

LENFANT: Yes. But it became very clear that one of the transmission routes was blood transfusion and because transfusion medicine was part of this institute, we were given the responsibility for AIDS blood safety by Edward Brandt, the Assistant Secretary for Health, during the Reagan administration. That is when we initiated a large number of studies about blood safety.

FYE: How hard was it to deal with that issue because of the emotional dimensions of that and the public response to it? It seems that it is more complicated than most issues that the institute deals with.

LENFANT: It is interesting that you say that. It was not hard, it was just that it was not viewed as perhaps the most important type of research. Ed Brandt is now the chancellor at the University of Oklahoma; he was a very remarkable guy. But, anyway, we have to compete. Remember in those days people were dying in two or three months, and the main interest was in trying to impact the mortality rate. The interest in transfusion was not viewed as perhaps the most important issue and then, pretty soon, tests were developed to detect the virus. This was the big discovery of Gallo and Montagnier.

FYE: Montagnier being the man in France?

LENFANT: That is right.

FYE: Trying both to claim that they made the discovery.

LENFANT: Yes. Well, they discovered the virus, and this led to research to detect the virus, that is, to develop a test. Today there is a renewed interest in blood transmission of pathogens, not transmission per se but how to develop safe blood. This is going on in any country of the world where transfusions are given. If blood is not looked after very carefully then people probably get the disease, and it is clear that this is a means of propagation today.

FYE: Certainly there was that case several years ago. I think it was Romania, if I am not mistaken, where all the little children were given transfusions . . .

LENFANT: Sure. It was Romania, but now in Africa...

FYE: Africa with the incredibly high prevalence of HIV.

LENFANT: Oh, yes.

FYE: And primitive techniques, I assume, in many hospitals for screening the blood.

LENFANT: Yes. If you go to Africa and need surgery, you have less risk by postponing it for ten hours and then fly somewhere in Europe than having your surgery somewhere in Africa.

FYE: Scary prospect, isn't it?

LENFANT: Yes, really scary.

FYE: I wonder if we could turn to some of the educational programs that were developed during the 1980s; I think there were six major new educational programs: cholesterol, smoking, blood resources, asthma, rapid treatment of MI [myocardial infarction], and then obesity and physical activity. You have obviously been very involved in all of those, I assume some perhaps more than others, but I have some questions that I would like to ask about each of them. First the smoking education program was in 1985. We talked about that but what were some of the specific things in 1984 or 1985 that you recall that really led to the creation of that specific educational program. I guess, why then, in other words?

LENFANT: I think I can tell you why. When I came here as the Director, there was only the blood pressure program, which started in 1972 subsequent to the Act that you referred to earlier. I thought that we had to pay more attention to that. There were two ways, one of them was to start the comprehensive multi-risk factor program or to have a number of programs each affecting a risk factor. The latter was decided on because the blood pressure people had a real ownership of their program and it was a little like asking them to share it with other programs. So that being said and smoking being then recognized as a significant risk factor, we decided to have that educational program, but it was always low key because, at the same time, the Cancer Institute developed its program with much more money and much more visibility, and eventually they were given the lead in the Public Health Service to run the PHS smoking educational programs. So we ran ours for a few years and then we phased it out. I should say we let it die its own natural death instead of trying to salvage it. That was okay, because the Cancer Institute has done a superb job, and we really were not in a position to compete with them. In a general way, my feeling is that if somebody does something that we could or should do, fine, that gives us more resources to do something else where we are the only ones who can do it.

FYE: That certainly makes good sense. That is a pragmatic approach which you just articulated exactly.

LENFANT: Yes.

FYE: You do not feel compelled to have ownership of all these things that you theoretically could.

LENFANT: No, in fact, I have to say that I may be one of the very few here on this campus to have this kind of reaction. There is a little bit of jumping on the bandwagon approach here at NIH. You start something that nobody was involved with and if it works then immediately everybody wants to do it. Very interesting.

FYE: Thinking back to 1985 with the launching of the smoking education program, how did the activities of the Institute and that program relate to the activities of the Surgeon General's office?

LENFANT: We were working very closely with the Surgeon General. At that time, the Surgeon General was producing a report each year on a different aspect of smoking, and we were very involved. There was a clearing house on smoking or whatever it was called downtown. I do not believe they have it anymore. The fellow who was running that was kind of a hyperactive type of guy, and so we were very much involved in that.

FYE: Now the other aspect of government involvement obviously is Congress and their role in funding the activities of the Institute but also some of the political things. One of the tensions that I have observed has to do with the tobacco lobby and the fact that there are certainly several states in this country that have major industries related to tobacco, particularly the southeast. Have you ever been caught up in that or got caught in the crossfire of congressional debate. How is it that the Institute stays out of the fray?

LENFANT: No, we haven't. The Cancer Institute was the lead institute on smoking for the Public Health Service, and each time there was a hearing, Mr. [Henry] Waxman was leading the charge about the subject and the Cancer Institute was always called upon but not us.

FYE: Henry Waxman.

LENFANT: Yes.

FYE: So, he would call the hearings and then for smoking issues they would look to the National Cancer Institute.

LENFANT: But the department would say to the Cancer Institute, you go . . .

FYE: The HHS?

LENFANT: Yes, or the Public Health Service, whatever. The Cancer Institute was always at the forefront there.

FYE: Let us turn then to the National Blood Resource Education Program. That was created in 1987, and we got close to that a few moments ago talking about blood transfusions, but could you tell me what were some of the factors that led to the creation of the National Blood Resource Education Program?

LENFANT: It is very interesting that because of the fear of blood transfusion or the fear about the safety of the blood, there was a decline in the number of blood donations. That became an issue of considerable concern to all the groups collecting blood. Let me see, there was the ABB, which was the American Association of Blood Banks, there was the Red Cross, and there was—I cannot remember the name—but it was something like Community Blood Centers or something like that. Then, there were a number of activists who support one of these blood groups, but also there were surgeons because they did not have enough blood. All these three groups—I think there was a fourth one, but I cannot remember what it was—were all complaining about the same thing, but they were always fighting with each other. I mean, really fighting in a nasty way. They came to realize that it was a bad thing to do, so they came to us and said, “Would you help to bring us together to increase blood donations, and, irrespective of whether we are one group or another group, just increase donations.” Then, of course, they asked us to come up with some guidelines on blood safety. We agreed to do it. We worked with them quite effectively because they stopped fighting with each other. The interesting thing that happened is that not only did they stop fighting but they even supported each other and decided to have some public service announcements sponsored by all three of them. So, it was okay. After a while, a number of years, I do not remember how many, it became very clear that we were no longer needed and so there again we let the program die in the Institute. We still work with them. That woman I was talking to earlier on the phone, who is the Director of the Blood Division, is very involved with all of these groups. We work very well with them, but they no longer need us as a cheerleader. So that worked well.

FYE: So, this was an example of where in a sense you could say that the advances in the science of blood banking and safe blood reduced the need for this particular activity.

LENFANT: Well, it is more than that. We were viewed as being impartial. In fact, irrespective of the topic, when an educational program is started by one organization, it has lots of problems because it is viewed by all the other organizations as if this organization is trying to pull a fast one.

FYE: Let us turn now to the National Asthma Awareness Program of 1989—there is no lack of programs here. I want to ask again more or less the same questions. What were some of the factors that led to the creation of the Asthma Awareness Program, now a little more than ten years ago?

LENFANT: That was very interesting. At that time, the president of the American Academy for Allergy and Immunology—that is what it was called then, now there are four A's but in those days there were only three—was a fellow by the name of Dr. Alfred Sheffer, who is a clinical professor of medicine at Harvard. He came to see me, and basically he said what I think I have been saying to you, “We know a lot, but we do nothing about it. We have to bring all the interested forces together and communicate a national message.” This man is an interesting character; I like him a lot and we became personal friends. You must recall though that, at that time, the National Institute of Allergy and Infectious Diseases was really the lead in asthma, but the President of the Academy said, “They do nothing, they are not interested, you have to do it.” The man sat here, and after a while I gave up out of exhaustion and I said, “Okay, we'll do it.” That is what started the asthma education program in this country. So the first thing that we did was to develop guidelines. This is a very interesting story which is a page of history, actually. We said, “We have to bring together all the forces, lung doctors, pulmonologists, as well as immunologists and allergists, and bring all these people together.” So we did it. Sue Hurd, who was the Director of the Division of Lung Disease, really ran the program, but I was somewhat involved, and we produced these guidelines, which had an extraordinary reception in this country. I think it took two or three years to produce the guidelines, and then, of course, we were not the only country to have produced guidelines. There were guidelines from Great Britain, Australia, New Zealand, perhaps another country or two, but they were all somewhat different, and Sue who was very perturbed by that. She said, “I cannot understand why asthma is different in Great Britain from here.” So she invited all these people to come to discuss the issue of why it is different and, believe it or not, all these people recognized that there was no real difference and that led to the development of international guidelines sponsored by the Institute.

FYE: That must be one of the very first examples of such a meeting of minds on guidelines. Was it the first that you are aware of?

LENFANT: Oh, yes. That had never been done before. But you have not heard the end of the story. All these people from five or six countries said, “If we have done it for our countries, we should do it for the whole world.” That led to the creation of something which is called GINA, Global Initiative on Asthma.

FYE: Oh, so initiative gets two letters?

LENFANT: That is right, to make it GINA. The Institute was the main sponsor of this, and we were talking to all these people, so we said, “Let's go to WHO, the World Health Organization, to ask if they would be partners.” They agreed, which has been like bearing a cross. I mean, working with WHO is no piece of cake. That has been very painful and it still is. The fact of the matter is that GINA developed its own guidelines, which were not very different from the NHLBI International Guidelines, but it gave a perspective for developing as well as developed countries. That led to the production of clinical guidelines the size of a small textbook, if you want, on what to do in the middle of India or in the middle of China. Believe it or not this document has been translated into 22 different languages.

FYE: That is amazing.

LENFANT: The interesting thing is that it does not cost a penny to the Institute. It is all sponsored by a coalition of pharmaceutical companies, 16 of them. Big or small, here or somewhere else, they all give the same amount. Not to us. There is one of these educational organizations that is administering the program and collects the money. The program meets two or three times a year. It has its special meeting in January, just for the GINA Executive Board. It also meets at the American Thoracic Societies and it meets again at the meeting of the American Academy of Allergy, which is now called Allergy, Asthma and Immunology. The Board has 16 people from all over the world, Australia, England, China, France, and other countries, and I go. It is a wonderful program. In fact, we set up an activity which is called World Asthma Day, and the first one was two years ago beginning in Barcelona. There was an event in Barcelona but, in addition, some countries have their own event. Last week was the second World Asthma Day.

FYE: Is it the same day every year?

LENFANT: No, it was a different date. Two years ago, it was sometime in September, and this year the official day was May 3, and in fact, the day before I went to London to make a public announcement. It was very well picked up by the media, but the interesting thing is that on May 3 at 7 o'clock in the morning in New Zealand an around the world discussion of asthma began and it ended on the west coast of this country. It was on the Internet, all around the world through a system which is called Webvention.

FYE: Webvention?

LENFANT: Webvention, meaning holding a convention on the Internet around the world and I can tell you that 105 countries participated in it.

FYE: Incredible.

LENFANT: We had speakers from everywhere. [Nelson] Mandela participated, ministers of health from other countries, not in this country, but the Surgeon General made a video which was broadcast around the world and had tremendous success. It was quite an event. I was in Japan, actually, to finish it; the Japanese decided to have their own event, Asthma World Day, in addition to the around the world web event, and I was there on Friday for that.

FYE: You have mentioned these various places, Toronto, Japan, London, that you have been to. How many trips a year would you take on average? It sounds as though you travel a great deal representing the Institute and doing many official things.

LENFANT: I make maybe ten international trips a year. This year is exceptional because of that World Asthma event. Then, I am involved in a number of official cooperations that we have government to government. I also have been given the responsibility by the Department of State to be one of the U.S. governors on the Governing Board of the Bi-national Science Foundation between Israel and this country. So I go to Israel and participate in that. I am also the Department of Health and Human Services representative on the German Department of Science and Technology. For example, when I go to Louvain for this meeting on cardiology in this century . . .

FYE: Right, now on cardiology in this century.

LENFANT: Yes. But when they invited me it was cardiology in the next century! Before going there, I will be in Bonn for a couple of days so that is fairly exceptional. The first meeting of this year was for GINA when we had our meeting in London. Where else have I been? I do not know. I think I have been in England once before, and then I have done these two trips there, and then next week I am going to Germany. Later in June, I have been invited to the European or French Society of Cardiothoracic Surgery—I really do not know which one—but it is having a meeting in Paris which is called Surgery 2000, and the chair of it is a fellow who used to visit in my laboratory when I was doing research in Paris.

FYE: 45 years ago.

LENFANT: That is right. So he invited me to be the keynote speaker and to speak pretty much on the same subject as in Louvain but with a focus on cardiovascular surgery, on what I see happening in the years to come. In October I have to go back to Paris for GINA, and that is pretty much it.

FYE: I hope when you go back to France that you will make some observation that 45 years ago you had a little different perspective on cardiac surgery. You were there when it began.

LENFANT: Oh, yes.

FYE: One thing that is interesting, you mentioned how the American Association of Allergy and Immunology adopted asthma. It strikes me that some pulmonary specialists might have been a little dismayed by that because clearly that is a pulmonary disease as well.

LENFANT: Not so. The issue was that both groups were working in asthma but independently, with no realization that the two approaches had to converge and to become one. Off the record, I could tell you that Sue Hurd who actually started it all is now my wife!

FYE: Again, congratulations.

LENFANT: She left the government and is still working on GINA. Actually she is now starting another program which is patterned after GINA, which is called GOLD. It stands for Global Initiative on Obstructive Lung Disease.

FYE: I guess my question about asthma and the allergy association had more to do with clinicians. Obviously, I am not trained in pulmonary diseases, and I do not know how many pulmonary specialists viewed asthma as part of their practice.

LENFANT: They did, but only from the functional viewpoint, not from the mechanisms and not on the cause of it.

FYE: Okay.

LENFANT: Allergists were looking more for the cause of the allergic reaction and had no idea about how the pulmonary function was altered by this disease. That is why it was absolutely necessary to bring these two groups together. In fact, GINA's executive board has as many allergists as lung doctors.

FYE: Again, I am just intellectually curious about organizations and turf and diseases that are somewhat arbitrarily adopted or given up by one specialty or another. The professional society for pulmonologists did not make a fuss about the allergy association including asthma in their name, as far as you know?

LENFANT: That was 20 years ago. It was a different world 20 years ago. Remember, the government itself had decided to pay attention to lung disease only 30 years ago. So you have to march with history.

FYE: I think it is important. I am curious though to know that it did not create much of a flap and it did not seem to be a big issue. It just found a more comfortable home and a headline, if you will, and the organizational entity. Turning to another one of the major programs of the Institute, the National Heart Attack Alert Program was launched in 1991 and again I ask you what were some of the factors from your perspective that led to the creation of the National Heart Attack Alert Program.

LENFANT: The driving force there, and I think the Institute can take credit for having been responsive to a call from the scientific community. This has usually been the determining factor, but not always. The blood pressure program was an exception. For the blood pressure program, we responded to the Secretary [of HEW], who was Elliott Richardson. He asked Ted Cooper to create the blood pressure program because his father had died from a stroke. The driving force for the heart attack program was a fellow I am sure you know, [Michael] Mike Weisfeldt.

FYE: Very well.

LENFANT: Now you will have to ask him why he was interested in this, but he came to the Institute and his point was, "People have a heart attack, and they sit somewhere for hours before they get to the hospital, and often when they get to the hospital, the people don't know what to do. We have to address that." So we started by having a conference to discuss all the issues, and that led to the development of that National Heart Attack Alert Program, which stimulated lots of things. That program includes very interesting groups. It includes fire departments, the emergency services, the police—what is the association of the police, the name escapes me?

FYE: National law enforcement?

LENFANT: Yes, the national group, it has kind of a fancy name; they participated in the conference. In fact, we give talks at their national convention. The idea behind the program was to reduce the delay between event and emergency room to 60 minutes. I think that over the years, believe it or not, we went from more than two hours to about 60 minutes. We have done it.

FYE: I remember the publication that came out of that because it is an area of professional interest of mine. I was impressed with the information in it, the data that was collected, and the approach that was used. Was Mike Weisfeldt the President of the American Heart Association at that time? It would have been around that time?

LENFANT: Yes, it was pretty much around that time.

FYE: I wonder if you recall whether he came as a representative of the American Heart Association?

LENFANT: No, but he chaired the conference. The first event was to have this conference, and then we constituted the program. The Director of the Institute is the chair of all these programs. Maybe you do not know what these programs are, but each program is not a mythical thing. There is a coordinating committee that governs the program, and these coordinating committees are all of them made up of between 30 and 40 different organizations, which are either professional or public organizations or government organizations which relate to the subject matter. This is why the fire department, the police law enforcement, and whatever are part of the Heart Attack Alert Program.

FYE: It seems to me it is similar the American College of Cardiology Bethesda conferences.

LENFANT: I have never attended one of them.

FYE: They bring together, I think, in a way very analogous to what you are describing, people representing different interest groups both professional and, in some instances, not professionals to get together and discuss concerns.

LENFANT: The College has a representative on all of these programs. In fact, we just had a big to-do with the College on the Heart Attack Program because now you have this coordinating committee, and I am the chair of it. But we constitute an executive committee of the coordinating committee which is usually chaired by one of the members. For the Heart Attack Alert Program, it was James Atkins from Dallas. When George Beller became the president, he decided to replace Jim without any warning, nothing at all, and I was a bit upset by that. So I wrote to him and he backed off. I thought that was a terrible decision, because Jim Atkins...

FYE: ...is a big pusher of defibrillators. He was important in pushing for airplane and other public defibrillation.

LENFANT: Yes, he has been a real force behind such programs.

FYE: But wasn't it through Congress that Atkins got very involved with defibrillation.

LENFANT: They talked about it, but they did not get involved.

FYE: Okay.

LENFANT: Now we started a program, which is called public access to defibrillation, and it is not going well at all.

FYE: Is that right?

LENFANT: Yes, I may have to discontinue it, actually.

FYE: What have been the problems with it? First of all, maybe I should ask you to explain the premise of the program. What was the premise behind it? I know it, but for the record, the public's access to defibrillation?

LENFANT: The whole thing started in Seattle. Seattle was really the place where they demonstrated that if you treat people who become sick on the sidewalk and do something to them when they are on the sidewalk, they do much better than if you carry them to the hospital and treat them. In Seattle, they have defibrillators in the ambulance services, and so that led to it becoming a national issue. Then there were some defibrillators which had been placed in airplanes and other public sites. But there is some risk with using these defibrillators, for example, if you apply it to somebody who does not have a heart attack or a sudden death or a cardiac arrest. So it was decided to do a study which is called Public Access to Defibrillators to demonstrate, first of all, how you can train individuals, whose job may be janitor or secretaries or whatever in say a public building, to apply defibrillation and, if they do it, what are the results. Buying a defibrillator to put in every building in the United States is expensive. So that is what the study is about, but it is not going well because, as is often the case I would say, the investigators are pushing very hard to make the study something different from what it was conceived to be for. So there are lots of problems, and I do not know how this is going to turn out.

FYE: Your sense is though that it will not become sort of a fixture in American society that there will be defibrillators liberally dispersed throughout buildings.

LENFANT: First of all I do not know, and it really does not matter what I think. I can give you an example. This last year I was in Florida. I went into a supermarket in Florida, where there is a blood pressure device at every corner, and so you see all these . . .

FYE: Elderly people

LENFANT: . . . elderly who go there, sit, and get their own blood pressure. One day, in fact, I was waiting for Sue—she was with her father—and I was watching people taking their blood pressure. I talked to them, and some people have blood pressures of 200/100, and I said, "What do you do about it?" They said "Nothing!"

FYE: Just keep measuring it.

LENFANT: Keep measuring it. I saw this, and I said, "I really think you should go see your doctor because that's a very high blood pressure." People were looking at me and they said, "But when I talk to my doctor he doesn't pay attention to it." This is actually the issue of the systolic blood pressure. I do not know if you are aware of that, but just last week we started a national campaign on systolic blood pressure.

FYE: Yes, I am aware of it.

LENFANT: Which has had a tremendous success in the country. Seldom has something that we did in the Institute received so much attention. But do you know the reason?

FYE: No.

LENFANT: Well, all the reporters that I spoke to said to me, "What's new?" I said, "Nothing," which is true, and then I said, "We have known about systolic blood pressure for years. What is new is that we want people to pay attention to it."

FYE: Right.

LENFANT: They were so impressed by that that it was in all the newspapers.

FYE: It strikes me that the term that has been applied to diastolic blood pressure forever is "important."

LENFANT: Sure.

FYE: That is the important number.

LENFANT: Physicians themselves say so!

FYE: Absolutely. That was what we were taught, that is how we practiced.

LENFANT: Well, I tell you, we put the systolic number on the map last week.

FYE: That is very interesting. As you mentioned earlier, you have people that scan the newspapers, the New York Times, the Washington Post, I imagine Newsweek, Time, and a multitude of other sources looking for areas that someone has picked up on that then they may call your office so you have an anticipation of these things.

LENFANT: Oh, yes. There are organizations whose job is to track what is going on and we contract with them. We ask them to send us the newspaper clips each time an important health issue is mentioned; if it is two lines or five pages or whatever, they get the copy of all the national or local news where we are mentioned, and we get it. And we never have had as much recognition as for that systolic thing, where we announced nothing new!

FYE: A new approach to something that is old. How fascinating. One thing in terms of the National Heart Attack Alert Program, I would suspect that one factor in that was really the interventions, thrombolytic therapy in particular, but catheter-based interventions, where suddenly there is not only a compelling reason to get to a hospital because you might have a cardiac arrest but because there are more active interventions possible than 25 years ago when you went to the hospital. Then you were put in bed and somebody fed you, and you were kept in the CCU [Coronary Care Unit] for five or six days just resting. But what was the interplay with, let us say, Genentech, or the community of investigators that was very interested . . .

LENFANT: Almost none at all because that was not the issue. The issue was to reduce the time and it still is.

FYE: But, again, why is time important unless you are going to do something?

LENFANT: Because to bring a patient to the hospital, that is kind of a public issue.

FYE: That makes sense.

LENFANT: The care of the patient is kind of a private issue. Having said that, you are correct that we worked with all these organizations, and we worked with the public, and now we are focusing on what to do in the emergency room, but we felt that the main issue was to bring the patient to the emergency room. That has succeeded. We run research and things like that to educate the public and the communities, and lots of material has been produced which has actually been trademarked by the investigators and is being distributed and sold. It has been an interesting program.

FYE: I guess there is one thing that I am curious about. Am I incorrect in thinking that one reason to get patients to the hospital very promptly after a heart attack is with the advent of thrombolytic therapy first and then . . .

LENFANT: Sure. No question about it.

FYE: It is the time between the onset of the event and intervention so that was an incentive but your sense is that there was not any . . . I cannot imagine that Genentech, for example, was displeased with this program.

LENFANT: Oh, no.

FYE: I mean, they must have been happy.

LENFANT: I know, and in fact, they did support some of the activities that we had. But again, their involvement was because they knew that if we were successful that was of benefit to them.

FYE: More patients would be suitable for the therapies that they offered.

LENFANT: Correct.

FYE: But as you point out, yours was somewhat of a public health mission to get people into a facility where they could receive prompt and appropriate care and to heighten awareness of the importance of this. I am still amazed when I see patients that have known heart disease and they will tell this story that they waited for six or eight hours to seek treatment because they thought it was indigestion, despite all of this publicity about getting to the hospital soon and the various media notices about that.

LENFANT: Yes.

FYE: Let us turn to the National Cholesterol Education Program. We talked a little about that earlier, but that was one of the first programs, in 1985. Once again, could I ask you this general question: What were some of the factors that led to the creation of the National Cholesterol Education program?

LENFANT: There were several things that occurred really. There was the result of the lipid clinic research that came. Then, there were a number of smaller clinical trials that came. The statins came on the market.

FYE: That early?

LENFANT: Sure. I mean they came in 1985

FYE: Fifteen years ago.

LENFANT: Brown and Goldstein got the Nobel Prize for their work on cholesterol, you see.

FYE: It is amazing how fast time goes.

LENFANT: There was a convergence of events, and then the NIH decided to hold a consensus conference development conference. Anyhow, there were lots of controversies that people threw at you, "Of course, you lower their cholesterol, but they go and commit suicide." Do you remember all these?

FYE: Absolutely. Still I think in 1985 it is fair to say that cholesterol was still pretty controversial.

LENFANT: Oh, yes. So we had a consensus development conference and I think that Brown came, perhaps not Goldstein, but, irrespective of that, one of the recommendations that came from the conference was to start an educational program, and we did it. And here we did one thing that has been quite useful for this educational program and, in fact, was used later on for the asthma program, which is to give a simple message, and the message was, "Know your number." People heard that, it became a fashion to have your cholesterol measured, and I can tell you, the number of people who have their cholesterol measured and knew their number went from 10 percent to 75 or 80 percent in a few years. That was a fantastic success. If you look at all the risk factors for cardiovascular disease and all the Public Health Service objectives, the People 2000 objectives, you know what I am talking about. You will see that of all the objectives that were set for the year 2000, the only one which was achieved, if not exceeded, was the cholesterol control. All the other ones failed completely, but that one succeeded. In fact, the average cholesterol in the country, the mean cholesterol, has decreased considerably. I do not have a number to give for it, but it has decreased considerably.

FYE: Who was responsible for that little cute marketing idea of know your cholesterol number? Do you recall whether it was a specific individual or how it happened? It is almost as though a marketing company came forward with that idea, it is so clever.

LENFANT: I do not know. Here again we have a coordinating committee and the moving force there is Scott Grundy. He is an extraordinary person, and so committed. I do not know who specifically came up with that message.

FYE: It came out of that group, or that program. Well, one question. We mentioned briefly that there still was some debate in the academic and medical community, certainly in 1985, about the value of treating cholesterol.

LENFANT: Yes.

FYE: I think that there was less debate by 1985 than there had been in prior decades about the role of cholesterol because Framingham by that time had already demonstrated the role. But there was still debate, as you mentioned earlier, about the side effects of some of the medications, whether you got more cancer or did you commit suicide more?

LENFANT: The safety of the medications.

FYE: Yes.

LENFANT: The corneal thing and then . . .

FYE: So you confronted, I am sure, some nay-sayers in the academic and medical and scientific communities.

LENFANT: I think the great reason was that, little by little, people recognized the secondary prevention value of it. But the primary prevention really came in the second half of the 1990s, and that nailed the coffin, so to speak.

FYE: The West of Scotland study and other studies that really took everything to next stage.

LENFANT: Yes, CARE, and then what was the other one?

FYE: Four S.

LENFANT: Yes, Four S. That is right.

FYE: With regard to the National Cholesterol Education Program, this situation seems almost analogous to the tobacco industry. There were big industries with an interest in this. The beef industry, the egg industry and so so.

LENFANT: They all supported it.

FYE: Did they have a problem? I mean, what kind of fallout was there?

LENFANT: There is an organization which is called the Egg Board

FYE: Right.

LENFANT: When we started that program, they all came here and . . .

FYE: Threw eggs at you!

LENFANT: The executive director of the Board was a very nice man, and he could not understand what we were up to. His name was [Albert] Al Pope. He became kind of a friend, actually, and I convinced him; I said, "Al, we don't want, and there is no need to reduce egg consumption. That is not the issue. The issue is to use the egg differently." We started producing all kinds of recipes which eliminate the yolk and use the white, which is very rich in proteins, and in effect egg consumption went down a little. Afterwards, it started to pick up and now it is higher than ever, and the reason is that whites are used for all kinds of products. Then there were, it is a little like the salt issue—all these fields have their fanatics—the zealots as I call them. They do not like it when I tell them that, but you have zealots against salt—we have some here in the Institute—and you have zealots against dietary cholesterol. Yet the evidence is very clear that not everybody is affected by salt and not everybody is affected by dietary cholesterol. For dietary cholesterol, so far there is no idea on how you could identify people at risk. But for salt, there is a strong indication that it may be possible to identify salt-sensitive people, and that is where genomic research may become useful. I do not think anyone will pay attention to it, but at least intellectually, you can differentiate people. But these are my personal views, and again I have had lots of problems in the Institute with that. My personal view is that we just cannot take a position that it is all or nothing. If we cannot tell people that "You are responsive to salt, or you are going to increase your cholesterol because you have two eggs in the morning," then we should be very guarded in what we say, and not say, "The entire country should stop eating eggs." What the entire country should be doing, number one, is to use them in moderation, and, number two, if they have their cholesterol checked so that they can assess by themselves how they affect their cholesterol by monitoring the consumption of eggs. Likewise for salt. There were lots of debates in the Institute about that. It is interesting.

FYE: I imagine on most issues there are discussions and debates and negotiations, before the recommendation gets out there, whether it gets out there in a form of an RFP or grants or anything else. In most important programs, it is not that they just come down as a pure idea and everyone suddenly says, "Oh, sure, do it." What are the dynamics? How does it work when you come up with an idea, or someone else comes up with an idea, as big as some of these things? What is the working group? How do you deal with that?

LENFANT: There are lots of people who are very knowledgeable in the Institute. They do not get credit for what they are, what they know and for their contributions. There are people working on blood pressure—I could identify five or six people—who know more than most people in the country. Likewise in cholesterol. You see they have no vested interest in their study. They have a vested interest in the cause, and in the impact of all these studies. You would be amazed to hear how people out there who view themselves as the guru of cholesterol control, or the guru of blood pressure control, are not aware of very important clinical trials. I mean, you would be amazed to see that.

FYE: As somebody interested in history, I am never amazed by people that do not know things that you would assume they know.

LENFANT: Yes. But I can tell you, the people here know their stuff. Collectively, it is an invaluable source. So when something like that comes up there are extensive discussions within the Institute to formulate a position. Once we have the position then we take it up and develop whatever instrument is necessary to publicize this position: educational programs, national educational programs, some brochures, some conferences, whatever.

FYE: One aspect of the National Cholesterol Awareness Program. Thomas Moore is a popular writer who has written some pretty provocative things about cardiovascular disease, but, in September of 1989, he published an article in the Atlantic Monthly that criticized the National Cholesterol Education Program.

LENFANT: Yes. He even published a book.

FYE: And that article prompted congressional hearings. In reviewing the advisory council minutes of NHLBI, you discussed that article in the February 1990 meeting.

LENFANT: Yes.

FYE: I guess, to give them sort of a heads up and get their response. Actually, the minutes quote Moore's article in which he claimed, and now I am quoting Moore, "That the NHLBI launched one of the largest medical interventions in the nation's history without consulting Congress or the White House and without estimating either costs or benefits. It ignored or suppressed the views of respected and internationally prominent experts in the field who warned of its mistakes." Now, you informed the council that Moore's article contained some erroneous statements, and you indicated that the Institute had issued a formal statement on the program. Could you comment on that controversy, the Moore article and the furor it undoubtedly generated in Congress and, I suspect, elsewhere?

LENFANT: The fact is that yesterday there was a hearing. I went there, and Congressman [Henry] Waxman, who is part of this cause, good and bad, was the one on the attack. Actually, during the Reagan administration, Mrs. Connie Morella, who is our local Congresswoman and who is a Republican, also held some hearings. But what you may not know is that Thomas Moore was formerly on the staff of some congressman, so he had his entrée there. For whatever reason, I do not know what it is, he got the Congress to be involved but, today, I can tell you that I have no evidence that the Congress was really interested in that. It is something that for whatever reason they wanted to do, and they did it. I think in the end it was kind of a standoff. Our position did not budge, and, if they had a position, I do not think it budged very much. Every so often there are some people who start a campaign against cholesterol, but not very often anymore. Thomas Moore wrote another book actually...

FYE: Called Heart Failure?

LENFANT:: ...where he described me as a hero. Did you see that one?

FYE: I am aware of that.

LENFANT: You are aware of that? Yes. I will always remember that. I was a bad guy in the first book, but in the second book I was a hero.

FYE: It is interesting though how he apparently tried to engage, and successfully engaged, the government in this issue. It seems like it is a power thing . . .

LENFANT: What do you mean by "engaged?"

FYE: I mean, how the issue became noticed by Congress.

LENFANT: That happens all the time. I do that all the time.

FYE: Yes, you testified, but help me understand how often are you more or less expected to go before Congress and explain the actions of something that the Institute does.

LENFANT: Have you heard of Congressman [Daniel] Burton?

FYE: Yes.

LENFANT: From Indiana. He is the chair of the Government Oversight Committee.

FYE: Right. I remember that you had to leave once. We were going to be interviewed, and I know you had to go back and testify.

LENFANT: Yes. I am going again in June, on chelation therapy. I would not say that I enjoy that because you never know for sure how it will go, but so far I get a kind of kick from all these hearings which are controversial.

FYE: Most of the time, and correct me if I am wrong, my sense is your visits to Congress are not adversarial.

LENFANT: No, they are not.

FYE: They are informational; they are asking you for your perspective. But this particular time, it seems to me, would have been perhaps one of the very few times where there was the potential for controversy. Am I correct in that?

LENFANT: But let me tell you something about Burton, who had the only hearing which was anywhere close to a controversy and was an adversarial type of thing. I had to swear that I would tell the truth and all that. Now my position was a very simple one. It was that I would support any good application on chelation therapy. The problem is that, number one, we do not get applications, and the very few that come are not very good. I said to him, "Mr. Burton, you would not want me to use taxpayers' money to support bad research." So my position is that I am very interested in chelation therapy. I think it should be evaluated, but we have to do it in a serious way, not just because Joe Blow has a grandfather who says it is good.

FYE: What were the dynamics of that chelation hearing? I mean, how was it that that came to his attention?

LENFANT: There is a very interesting reason. One of the staff, in fact, is the chief of staff for health affairs. I believe this person is a strong believer in alternative medicine. She is really pro-alternative medicine, and all the people who are pro-alternative medicine have kind of a blind spot. I mean, nobody is against alternative medicine. When I was in Japan, at the end of my meeting, everybody was telling me about all you can do for asthma by eating this seed or that grass or whatever. But before you commit to it too much, remember the story of Laetrile. Do you remember that?

FYE: Yes, I do.

LENFANT: You have to have some foundation. I mean, that is what you did for the statins. Look at all the studies that were needed to establish it. Now why on earth would we do chelation therapy, which is not without risk, without the same type of verification.

FYE: That makes sense to me. What about the new institute that is devoted to alternative medicine? How has that been received? What are the dynamics of that being developed here and its response?

LENFANT: It is very good. The man who is the director of it is very good. In fact, we are working together on that chelation therapy thing. So we will see what happens. It does not worry me because I do not go there with a position, "No, I shall not do it." I do not take that position. I mean, people do not like sometimes the positions that I take in the Institute because I do not want us to be viewed as being arbitrary.

FYE: Again, speaking as an historian, there are multitudes of examples where dogmatic approaches to things turned out to be wrong. So I think your approach of trying to have an open mind and not to be biased is good. When you say no one is against alternative medicine, I would have to say I think that still the majority of the regular medical profession is very skeptical, and I suspect the scientific community in general is at least as skeptical of alternative medicine as are the practitioners.

LENFANT: Yes, sure.

FYE: But one era's alternative medicine is the next era's mainstream approach . . .

LENFANT: Absolutely.

FYE: Thinking of French medicine where in the world was leeching and bleeding more popular than in France and that was not because those French physicians were stupid, right?

LENFANT: Keep in mind that aspirin started as alternative medicine.

FYE: Oh, is that right? That is interesting.

LENFANT: Yes. It started with a plant somewhere, I think maybe in China or wherever, which was rich in salicylic acid, and the wonder of curing headaches and so on.

FYE: Discussion of headaches and alternative medicine reminds me that I once published a paper on the introduction of nitroglycerine, and that was by homeopaths.

LENFANT: Yes, that is right.

FYE: It is interesting how medicines sneak into our pharmacopeia in unexpected ways. Talking about research, let us turn a bit to intramural research. Shortly after you arrived at NIH, Marshall Nirenberg won the Nobel Prize for his role in deciphering the genetic code, and he was head of the Laboratory of Biochemical Genetics here at the Institute.

LENFANT: He still is.

FYE: I was asking you about the response at the Institute when Marshall Nirenberg won the Nobel Prize. What did that do in terms of the atmosphere here? You, of course, were fairly new on the scene, but I suspect that electrified the community here.

LENFANT: He won in 1968, I believe.

FYE: Right

LENFANT: I came in 1970, which was two years later. I have to tell you in all honesty that I have no recollection of anything in particular with regard to that. At that time the Institute was in the middle of a big debate, which was the import of the lung program, the pulmonary program, becoming an official government activity.

FYE: Okay, the lung program.

LENFANT: What was going on was that the American Lung Association wanted very much to create a different institute, and so there were lots of debates about that on the campus. That was resolved actually by bringing the program into the Heart Institute. There was another issue, which was the beginning of the equal employment opportunity. I can tell you that even before I joined the Institute, Cooper invited me to a couple of meetings, and they were all revolving around the issue of equal employment opportunity. There were big debates on the campus about the lack of support for minority programs. It was the beginning of some of these social issues that we see today. So all that is to say that I have no recollection about Nirenberg. Then, also, you have to know one thing, which is that in those days the intramural program was to some extent viewed as almost a state within the state.

FYE: Could you expand on that?

LENFANT: The intramural people viewed themselves as having nothing to do with the directorship of the Institute, and they were independent. I mean, they had to be present to get their money, but once they were getting it, that was the end of it.

FYE: Was it a certain sort of elitist thing?

LENFANT: Yes.

FYE: But, objectively, was that good reality testing? Were they better scientists? I assume that there were outstanding scientists here, but there were certainly outstanding scientists sprinkled around the country in multiple contexts.

LENFANT: In general, the NIH scientists are very arrogant.

FYE: Arrogant?

LENFANT: Very, very arrogant.

FYE: More so now than when you came, or about the same, do you think?

LENFANT: Still the same.

FYE: What do you think accounts for that?

LENFANT: I think it is a long tradition. I do not want to be critical of anyone but, in the extramural community, the Institute would not think of sponsoring a clinical trial without appointing a Data Safety Monitoring Board. In the intramural program, it is like pulling teeth to create these oversight bodies that basically would bail them out of the water if they ran into trouble. But they say, "Oh, we don't need that. We know better." No, they are very arrogant. Thank God, in our Institute . . . do you know Betsy Nable?

FYE: Yes.

LENFANT: She is now in charge of the clinical research program here, and, as you know, she comes from outside and brings a different viewpoint. You have to realize one thing. I mean, the Institute is 52 years old and this is the first time that somebody who was not born and grew up here is in charge of the intramural program. Before they were all inbred.

FYE: Were their debates about that? I assume that over time there were debates about the merits of that, or was it just taken as a given that the person that directed the clinical research programs would be an insider.

LENFANT: The first Data Safety Monitoring Board [DSMB] was created by me three or four years ago, after we had the big to-do in the intramural programs after the accusation of the *Wall Street Journal*.

FYE: Is that about the pacemaker and hypertrophic cardiomyopathy?

LENFANT: That is right.

FYE: I noticed!

LENFANT: Yes, it was hard not to notice it. It was a very difficult issue.

FYE: Was it hard to get that committee established or, in that context, did you find it relatively easy to get the Institute to accept that?

LENFANT: Oh, no, even that was tough.

FYE: What were the arguments used against it?

LENFANT: They do not need it, they know how to do it, they are the best scientists, they have done it that way for 50 years or 40 years, whatever it was at that time.

FYE: What arguments did you use that were compelling? In other words, how did you get it established.

LENFANT: I could care less what they thought! I was going to do it.

FYE: You did it. And you have that authority?

LENFANT: Oh, sure. They are appointed by me. Even in the extramural community, you see, I appoint those Data Safety Monitoring Boards, and all their reports are to me. And people know I read them. It is very interesting. I mean, you may think that it is an excessive authority. But I do not view that as an excessive authority.

FYE: A what? I am sorry.

LENFANT: An excessive authority. I do not view that as such. You have to give the responsibilities to someone, and it is given to the Institute. I did not create this, it was always like this, but I am not sure that the authority was exercised the way I do it. I really read those things. In fact, that makes me feel mad!

FYE: Do you think that the response has been generally favorable though to the creation of the board?

LENFANT: Oh, yes, because you do not see us in the newspapers.

FYE: Do you think part of it is just resistance to change?

LENFANT: Yes. Changes are difficult to do. They always create uncertainty.

FYE: What are some of the biggest changes? I am following your lead here. What are some of the biggest changes you have noticed in the almost 20 years that you have been Director of the Institute? Things within the Institute, maybe things that you were responsible for, or things that you did not necessarily . . .

LENFANT: It is the level of complaints. People complain about everything. Let me give you an example. Three or four months ago, we got a letter from some fellow who said that we discriminate against older scientists, and he sent some data to show it.

FYE: This was presumably not just an informational item. I mean, this was a serious complaint.

LENFANT: It was an absolutely serious complaint. So I told the staff, "Why don't we analyze the data and look at what he is talking about." The staff looked at it, and they came up with the conclusion that it was not so and they provided a table of data and graphs and whatever. Yesterday, I was not here. After Tokyo I went to Greensboro in North Carolina on Saturday to visit Wake Forest University. Anyway, this morning when I came in, I looked at the mail and now there is a new letter from the man in which he says, "Well, I looked at your data, and I analyzed it in such a way that now there is irrefutable proof that you discriminate against the older applicant." I just read the letter and I thought, "Oh God," and so we are going to look at that. This is one example.

I can give you another example. There is a fellow from somewhere in the South who just could not get a grant. He wrote to me and I wrote back, and he wrote again and I wrote back trying to say, "That's the process." Then he wrote again, and I saw that I was getting nowhere so I decided to take another approach. I said, "Let me suggest something to you. Perhaps you should ask some of your colleagues that you respect most in the country to look at what you do because sometimes people have a very good idea but they cannot convey it very well. Perhaps you are correct and we should support you, and that might give you some insights which would be helpful." Boy, you should have seen the response that I got. That ended our writing relationship. But the man basically said in his letter, "How dare you tell me something like that. Although I was born in Portugal—I had no idea he was born in Portugal—I have received all these awards for my writing and the way I communicate" and things like that. And coming from me, of course, it may look like a joke. But he was really mad. So I put the letter away and I said, "Well, so much for this one!" All the time there are things like that.

FYE: But I suspect you have to take them seriously.

LENFANT: Oh, I do.

FYE: I mean the ones you just explained about what you did. You took the time to write letters to these individuals, in one instance, three letters, I think. Part of it is your own approach to problem solving, I suspect, but another part of it is that the government—and you are part of the government—and you could wind up not only in *Atlantic Monthly*, but elsewhere as well. I mean, if that man carries his case to some higher level, and there is no response to his claim of age discrimination in the NHLBI grants. How much of your time do you have to spend dealing with those sorts of things?

LENFANT: Lots of time. Admittedly, I do not write all the letters, but I write a lot of them. Just ask my secretary, and she will tell you that each Monday morning I come here with 40 to 50 letters for her to write. That is what I do during the weekend. During the week I do not write so many letters, because I have meetings and I have to do this or I have to do that. But many letters are written for my signature, and I read them all and very often I have them rewritten. There are three types of letters that are the bulk of the mail: letters from the grantees, which are most of them complaint letters or they want something and why do they want to do this, why don't they do that; letters that go either to the Secretary or to the White House and are sent here . . .

FYE: For your response or for the Institute's response.

LENFANT: Most, I would say 99 percent of them, are for my signature.

FYE: Do they come to you as a text from the White House or is the letter they receive sent to you and someone here drafts the reply letter? When you say it is for your signature and it is forwarded from the Secretary or the White House? Is that a letter that went to them, and then they send the letter to you . . .

LENFANT: Yes.

FYE: Do they draft the response?

LENFANT: No. They send the letter here to prepare for the signature. Let me see, I may have one here.

FYE: I am just trying to clarify if they draft the letter.

LENFANT: No. They send the letter, and they would say, "Prepare a response for the Secretary's signature" or "direct response," which means it is for my signature.

FYE: I see.

LENFANT: So these are letters that went to the President, or the First Lady, or the Secretary of HHS, and then they come here. I get involved with all these letters. Then, the third type of letters are for all the residents' waivers. Do you know what that is?

FYE: Yes. For visas.

LENFANT: Yes.

FYE: The scientists that want to get special permission to work in this country.

LENFANT: That is right. That is the touchiest thing because often people will write to me and say, "I want to have whoever stay in this country, can you help?" And I respond saying, "No, I cannot help because the letter may come here for me to give an opinion, and we cannot have a conflict of interest." We receive approximately two such letters a week. I mean, we turn down most of them in this Institute. But for all these letters, we analyze that much paper, all justifying the petition to the government for that person to stay here. But the government does not ask me to make a decision. They ask for a recommendation on the basis of the file. They give us four questions and they say, "We want your recommendation for the Immigration Office. That is where the petition is made, to the Immigration Office. They ask us to come up with four questions, and unless we respond positively to the four questions, they deny the request. We have to give a negative recommendation, and by and large people send pretty darn sloppy applications. People do not do their homework. It is a little bit like writing grant applications. So many grant applications have good ideas, but they do not make it because the application is sloppy and, boy, do I get some flack on that.

FYE: That you are perceived to have expectations . . . or that your standards are too high?

LENFANT: No, my response is to Immigration, and I do not know whether Immigration discloses our letter. I do not know that. I never ask them, and I could care less, actually. But people are not stupid out there. They know that the application comes to the Public Health Service and if it is on cardiovascular disease, they assume that it would come here. If it is not here, it could be to the Aging Institute [National Institute on Aging]. I guess this is another possibility. If it is a researcher who works on stroke, it may go to the Neurology Institute. I suppose most of them come here. Sometimes people are not very nice about that out there. My reaction is that I am only asked for an opinion. People do not have to follow my opinion. So it is interesting.

FYE: What are some of the other challenges?

LENFANT: What are the other challenges? Every day is a challenge, but that is what makes it interesting. These are very interesting jobs, at least to me.

FYE: What do you think is the most important quality that you bring to the job?

LENFANT: I do not know. You have to ask somebody else about that.

FYE: Let me ask you in another way. As you look forward—I do not know whether people will ask you or whether you would have the opportunity but I hope that you would—what would you suggest should be some of the qualities that they look for in your successor?

LENFANT: It is a difficult question. I hesitate because some people would tell you that I do not have that quality, but I think it is very important to have an open mind. I do not have preconceived ideas, except for one thing and it is that we work for the Institute and for the public. Therefore we have to serve everybody, not just the people whom we like or the type of activity that we like. I can tell you right now that in the Institute I have a real problem with one of my colleagues who has a very important position, but somehow he views his job only through the discipline in which he has been formed. I have tremendous concern about that. The cardiology community will make its judgment after I leave. I can tell you that when I was appointed by Wyngaarden, the American College of Cardiology campaigned very actively against me. The President at that time, either past or elected, was...

FYE: Why was that? Did they think you weren't a cardiologist, is that your perception?

LENFANT: Because I was not a cardiologist and because they all wanted to have Peter Frommer. I think Peter Frommer would have been very different from me. I really believe so. Peter is very smart, very careful, almost to a fault. I mean, all the dots on the i's or the bars on the t's, that is his life. But also he is very dogmatic, and I do not think I am. Although I am kind of a fanatic about quality control which I think is very important. It is very easy to let something go which you think of as nothing, but it can blow up into an unbelievable thing. So I think that that is very important.

FYE: Well, you worked closely with Frommer for many, many years.

LENFANT: He used to work for me.

FYE: I know. Right down the hall.

LENFANT: Yes.

FYE: So you still had a useful working relationship.

LENFANT: Yes. You know he is no longer here. He is emeritus now.

FYE: I did not realize that. Fairly recently?

LENFANT: Oh, no.

FYE: About a year ago or so, I guess.

LENFANT: No, more than that. I like Peter. He is a very fine man and has a very fine mind as well, but I think he is so dogmatic. Very dogmatic. In fact, the reason why he got to work for me at one time is because he was in charge of the Myocardial Infarction Research Units when they were created, and he was driving all these people so crazy that Cooper said, "You've got to take care of this."

FYE: What were people's concerns about him?

LENFANT: He was picking on everything.

FYE: Sort of obsessed with detail?

LENFANT: Oh, yes. A nit-picker, do you know what that is?

FYE: Yes. So, what other qualities do you think are maybe important for someone in the position of director? Being open-minded?

LENFANT: Open-minded, of course. I think to have a sense of what is important. I think in my days I was a pretty good researcher. Now I am not a researcher anymore, but I have a sense of what is important and is necessary for the Institute to go and do. As I pointed out, that there are lots of very good people in this Institute, and they have their ideas and they want this office to go their way or this way or that way. Sometimes this is a little too narrow so you have to find a common way to do things.

FYE: What has been the greatest challenge to you in keeping the people here that you have wanted to keep? I am sure there are some people that you are just as happy when they leave, but I suspect there are number of people you would like to attract to the Institute and there are some people that were here that you wished had stayed. What are the dynamics of recruiting people, the retention of them, what sorts of things did you deal with?

LENFANT: It is very seldom that people leave out of displeasure or discontent. Lots of people have come and gone, but all those who left, left for a position which was clearly an elevation in their career. Secretaries may have left for a lateral job, but among the professionals that is not the case. In fact, I can tell you that a problem in this Institute is that, within the next four or five years, about 50 percent of the work force here will be of retirement age. It is a real problem, but I do not know how to solve it because I cannot ask them to go and I cannot exceed the number of positions that I have.

FYE: I see what you mean. You are compelled to keep them on because there cannot be age discrimination in the federal government . . .

LENFANT: And also they are very good.

FYE: Right. They have certain attributes and experience and talents, but you have caps, so it is hard for you to bring in young, new, and, some might argue, more efficient researchers.

LENFANT: Yes, sure. We do have some very, very good people. Now, of all the recruitments that I personally have made—I make the recruitments at the senior level—there is only one that I thought was a terrible mistake. In fact, the man left and, from then on, he went down the drain. He got divorced, had difficulty with the law, and so that was mistake. Otherwise, I think the people who are here are very good. Most of them will probably tell you that I am a terrible pain in the neck to work with, but I expect that!

FYE: Why do you think they say that? What would be the common theme if they had to list the five reasons that you are a tough guy to work for, what are the top five on the hit parade?

LENFANT: Well, I do not pick on the dots on the i's or the bar on the t's, but I pick a lot on what can have an impact outside the NIH. I have very little tolerance for something which may have a negative impact outside.

FYE: When you say negative impact, what do you mean? Do you mean on the image of the Institute?

LENFANT: Yes. And then also not paying attention to how we communicate. I mean, basically, I am responsible for the budget. You may not know this but, in fact, my responsibility is such that if, for example, I overspend, I may be sent to jail. Did you know that?

FYE: A serious problem! I suspect you balance your checkbook very carefully.

LENFANT: Do you know that in this Institute we close our books lapsing no more than \$5,000 to \$10,000 out of \$2.2 billion?

FYE: Quite amazing.

LENFANT: That is not bad.

FYE: No, I would say.

LENFANT: But, having said that, many of my colleagues have a tendency to say "yes" to everything because they are in contact with the grantees, and I know that because I have the same reaction when people eventually talk to me personally. I really want to help them. So many of my colleagues say, "Yes" and then eventually the thing comes to me to okay it and I read it and my reaction is, "How can they have done that?" So we have to go back to the requester, and that really makes me upset. I do not like that at all.

FYE: When you become the bad guy.

LENFANT: Yes. But also, it is more than just being the bad guy. It is a little bit about seeing the long-term repercussions of all we do on the whole system.

FYE: Issues of fairness and process, things of that sort.

LENFANT: Yes, that is right. It is fairness and process, and that is what I was telling you about Governor George Lamb. If you do this, it comes from there, and so you must have a broad vision on the whole picture.

FYE: Tell me a couple more things that your colleagues do not like. Then I want you to tell me what things you think they like because obviously you have been doing this for a long time and the Institute is pretty successful.

LENFANT: You have to go and ask them. I do not know about that. No, you have to go and ask them, not me.

FYE: What are your own perceptions, though?

LENFANT: I think perhaps the most noticeable thing is that I am not aloof in the sense that many of my fellow directors are. In fact, I go to meetings and to events and people from other institutes would say to me, "Gee it's so nice to see you, we never see our director." In fact, if you would go up and down this building, you would see the offices of my colleagues: they all look like executive suites at a bank or something. I can tell you that the Executive Officer of the Institute had to insist on renovating the hallway, which was in a very bad condition. That is what people see, and so he decided to go ahead, and I have to admit it was a nice job.

FYE: I have seen it in its various stages over the last few years.

LENFANT: It is nice and so that is okay. That is a public place, and I can understand that. However, I have real concerns when I hear that people want to renovate their own offices.

FYE: You would not want to see a 60 Minutes team in the office!

LENFANT: They can come to my office. There is nothing impressive here. In our discussion I have focused on our Institute, but you could go see other floors above or below, and it is just like entering in a law office on Fifth Avenue. When I go see my personal lawyer the decor that is there is what you have downstairs. It is a big firm with 500 lawyers. I am not status conscious at all and the pressure that has been put on me to change this office has failed. This desk was the desk that was here 30 years ago. I am perfectly happy with it.

FYE: It strikes me again that that is a very pragmatic, thoughtful approach realizing that people are going to leave here with an impression that this is a functional practical office of somebody who is here to work . . .

LENFANT: Stingy, stingy!

FYE: Stingy! Okay, you covered the wall with images and not Impressionist paintings. No, I understand.

LENFANT: I walk down the hall every day and I talk to the secretaries and talk to people about their kids and whatever, and people know me.

FYE: I think we will end here. This has been great today. Thank you very much.